

# **Fifteenth Symposium on Thermophysical Properties**

June 22– 27, 2003

University of Colorado  
Boulder, Colorado U.S.A

## *Cochairs*

D.G. Friend  
National Institute of Standards and Technology  
Boulder, Colorado U.S.A

and

A. Mandelis  
University of Toronto  
Toronto, Ontario, Canada

## *Organized by*

National Institute of Standards and Technology  
and  
Committee on Thermophysical Properties  
Heat Transfer Division  
American Society of Mechanical Engineers

<http://symp15.nist.gov>



## **ABOUT THE CONFERENCE**

This is the Fifteenth Symposium in a well-established series of conferences held roughly every three years since 1959. The Symposium is concerned with theoretical, experimental, simulation, and applied aspects of the thermophysical properties of gases, liquids and solids, including biological systems.

The Fifteenth Symposium will feature approximately 120 sessions with more than 680 papers, with invited papers on many topics of high interest.

The areas of thermodynamic and transport properties of fluids and solids are broadly represented. The specialized and more general focus areas included in the Fifteenth Symposium are: properties of various classes of materials — solids, aqueous systems, fuels (including natural gas systems), polymers and mesoscopic systems, working fluids (including refrigerants), biomaterials, ionic liquids (and other solvents), and thin films; properties for chemical and metallurgical process design as well as for environmental applications; techniques including those based on molecular simulation, novel instrumentation and measurement, and photothermal/photoacoustic methods; phenomena such as those related to subsecond time scales, ultrashort time/length scales, wetting and interfaces, phase transitions/metastability/criticality; optical and thermal radiative properties; tools and processes related to biothermophotonic diagnostics and imaging, inverse problems, non-destructive evaluation; and finally, sessions devoted to such broad areas as fluid property measurements, theory and modeling, and property data, including demonstrations of databases. In addition to invited and contributed talks in these fields, the Fifteenth Symposium will include poster presentations on many of the topics included in the conference.

The Fifteenth Symposium features the presentation of the *Yeram S. Touloukian Award* of the ASME Heat Transfer Division.

## **PROCEEDINGS**

Papers describing all work presented at the Symposium were encouraged, but not required. A preprint volume on CD-ROM is available at the Symposium. Only those papers presented by an author at the Symposium will be reviewed and considered for publication in special proceedings issues of the *International Journal of Thermophysics* and *Fluid Phase Equilibria*.

## **CONFERENCE INFORMATION**

**Registration:** On-site registration and pickup of Symposium material will be in the Kittredge Commons from 4:00 - 8:00 pm on Sunday, June 22. Registration will continue on Monday morning in the Engineering Center, Room 133.

**Symposium Office:** The main office will be located in the Engineering Center, Room 133 (303-492-7220).

**Meal Hours:** All meals will be served in the Kittredge Commons dining room during the following hours: Breakfast: 7:00–8:30 am; Lunch: 11:00 am - 1:30 pm; Dinner: 5:00-6:30 pm. Dinner on Tuesday evening has been extended until 7:00 pm due to the Touloukian award ceremony and reception.

**Meal Packages:** Meal packages for those not staying in campus housing can be purchased at registration for \$91.73. The package includes lunch daily on Monday – Friday, dinner daily on Sunday – Wednesday. Individual meal tickets can be purchased at the Kittredge front desk at any time.

**Picnic:** The picnic will be held on Thursday, June 26, 6:00–10:00 pm at the National Center for Atmospheric Research (NCAR). Buses leave Kittredge starting at 5:45 pm.

**Touloukian Award Ceremony and Reception:** The award ceremony will be held on Tuesday, June 24, in the Muenzinger Auditorium beginning at 3:45 pm. A reception will follow in the Muenzinger Courtyard.

**Socials:** The social area will be located in the Hard Drive Cafe in the Kittredge Commons and will be open from 7:00-10:00 pm on Sunday and Tuesday. On Monday and Wednesday the social area will be open from 9:00-11:00 pm due to the evening sessions. Monday's social will be in the Kittredge West Main Lounge. There will be no social area on Thursday because of the picnic. The socials will have a cash bar for all beverages.

**Breaks:** All morning and afternoon breaks will be on the Math Patio.

**Messages:** Message boards will be located in the Kittredge Commons. Use the symposium office number, 303-492-7220, as your contact number for phone messages.

**FAX, E-Mail, and Copies:** Fax and copy services are available from either Kinko's Copies (303-494-2622) or Kittredge Commons (303-492-4507). There is a charge for fax and copy services. E-mail services are accessible through campus computers. The conference user name is confstp and the password is JUNEpass.

**Session Locations:** Most sessions will be held in the Engineering classroom building (ECCR) which is indicated as Eng in this program. A few sessions will be held in the Mathematics building, the University Memorial Center, the Coors Events and Conference Center, and Muenzinger Auditorium, as indicated in the program.

**Emergencies:** In case of an emergency, call the Kittredge Office at 303-492-7002 or the University Police at 303-492-6666. In case of extreme emergencies, dial 911.

**Transportation:** Boulder is 27 miles northwest of Denver via U.S. 36. The airport serving Denver is Denver International Airport (DIA). Boulder is approximately 45 miles northwest of the airport. Several forms of surface transportation are available from DIA to Boulder.

**Health:** Boulder Community Hospital is available for serious medical attention. For minor injuries or illnesses, the Wardenburg Student Health Center, on campus, is available to conference participants.

**Parking:** Parking permits for participants will be sold at the Kittredge Front Desk for a cost of \$17.00 for the duration of the conference. Permits for parking on campus are required, and tickets are issued if proper permits are not displayed.

## **PRESENTATION INFORMATION:**

*Oral Sessions:* In every room where talks will be held, an overhead projector will be provided for transparencies and a computer will be provided with projection capabilities for Power Point presentations. It is preferred that you bring your presentation on a CD or disk and use the computer provided in the room. This computer will already be set up to work with the projection equipment. You may use your own laptop, but in this case be sure to allow ample extra setup time. It is recommended you test your presentation in advance. Equipment will be available for this purpose in Room 131, Engineering Center (Building 22 on the campus map). If you want to use slides, or have other special needs, please contact the Symposium Office, Engineering Center, Room 133, 303-492-7220.

*Poster Sessions:* The poster sessions will take place at the University Memorial Center (UMC) on Wednesday, June 25, from 1:45-3:30 pm, in both the Glenn Miller Ballroom and Room 235 (across the hall). The UMC is Building 86 on the campus map. You will be provided with a board approximately 4 feet by 8 feet (1.22 meters by 2.44 meters), push pins, and Velcro sticky tape. There will be signs and a map to identify where your poster will be located; they are arranged by topic area. You may set up as early as 8:00 am on Wednesday, June 25, and must remove all materials by 5:00 pm that evening. If you will need a chair, or have other special needs or questions, please contact the Symposium Office, Engineering Center, Room 133, 303-492-7220.

*Software-Demonstration Sessions:* The software-demonstration sessions will take place on Wednesday, June 25, during three time slots: 10:35-12:20, 1:45-3:30, and 3:50-5:35, in Room 235 of the University Memorial Center (UMC) on the campus of the University of Colorado in Boulder. The UMC is Building 86 on the campus map. You will be provided with a table approximately 6 feet (1.83 meters) in length, two chairs, a small sign identifying your demonstration, an electrical outlet, and access to the Internet. You may set up as early as 8:00 am, and we request that all materials be removed by 8:00 pm on Wednesday, June 25. People requiring an Internet connection should come early to allow time to set up the connection. If you have any additional needs or questions, please contact the Symposium Office, Engineering Center, Room 133, 303-492-7220.

## **Technical Information:**

### ***Daniel G. Friend, Symposium Cochair***

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## **General Information:**

### ***Jacqueline Gosselin, Symposium Assistant***

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## **Housing and Registration Information:**

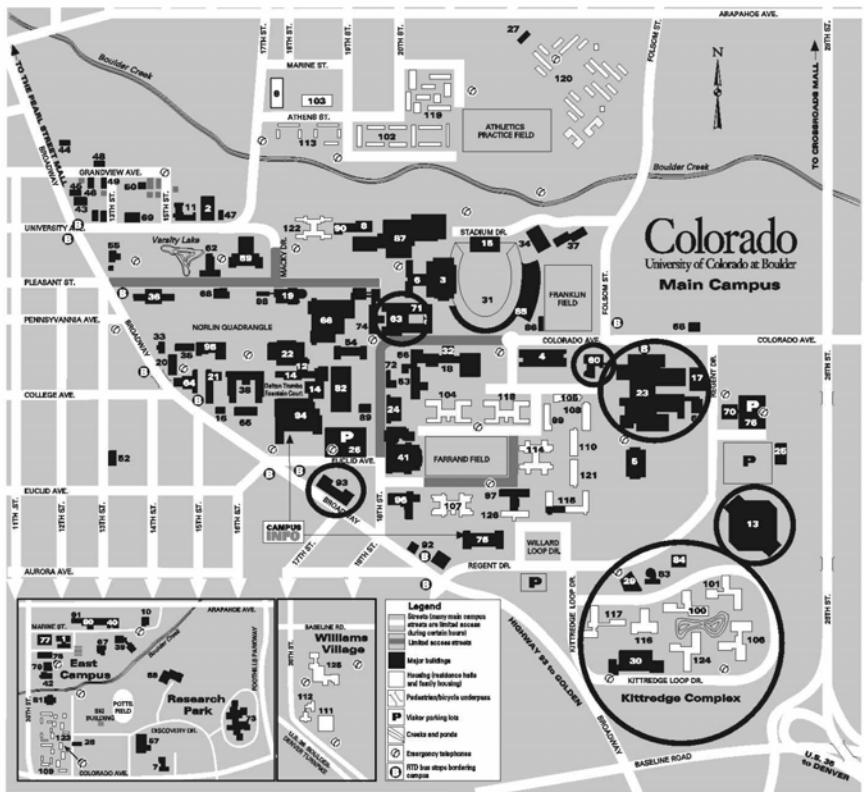
### ***Sara Tanner, Conference Coordinator***

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**Fax:** 303-492-5959  
**E-Mail:** sara.tanner@colorado.edu

**SPECIAL SESSIONS: TOPICS AND ORGANIZERS**

<b>Biothermophotonic Diagnostics and Imaging</b>	A. Mandelis, <i>University of Toronto</i> A. Vitkin, <i>Ontario Cancer Institute</i>
<b>Databases and Data Correlation</b>	M.L. Huber, <i>NIST</i> R.L. Rowley, <i>Brigham Young University</i>
<b>Fluid Property Measurements</b>	J.D. Olson, <i>Dow Chemical</i>
<b>Inverse Problems in Thermophysics</b>	R. LiVoti, <i>University of Rome</i>
<b>Ionic Liquids and Other Solvents</b>	J.W. Magee, <i>NIST</i>
<b>Molecular Simulation</b>	J.I. Siepmann, <i>University of Minnesota</i>
<b>Non-Destructive Evaluation with Thermophysics</b>	J. Kleiman, <i>Integrity Testing Laboratory</i> A. Mandelis, <i>University of Toronto</i>
<b>Novel Instrumentation and Measurement Techniques</b>	T.J. Bruno, <i>NIST</i>
<b>Optical and Thermal Radiative Properties of Materials</b>	Z.M. Zhang, <i>Georgia Tech</i> J. Liu, <i>Taitech, Inc.</i>
<b>Phase Transitions/Metastable Fluids/Critical Phenomena</b>	M.A. Anisimov, <i>University of Maryland</i> J. Thoen, <i>Leuven University</i>
<b>Phenomena at Ultrashort Time/Length Scales</b>	P. Norris, <i>University of Virginia</i> A.N. Smith, <i>U.S. Naval Academy</i>
<b>Photothermal and Photoacoustic Techniques for Property Measurements</b>	G. Diebold, <i>Brown University</i>
<b>Poster Sessions</b>	L.A. Watts, <i>NIST</i>
<b>Properties for Chemical Process Design</b>	T. Autry N.S. Foster-Mills <i>Pacific NW National Lab</i>

<b>Properties for Environmental Applications</b>	A. Anderko, <i>OLI Systems</i> W. Faubel, <i>FZK</i>
<b>Properties for Metallurgical Process Design</b>	I. Egry, <i>German Aerospace Center</i> R.A. Overfelt, <i>Auburn University</i>
<b>Properties of Aqueous Systems</b>	A.H. Harvey, <i>NIST</i>
<b>Properties of Fuels, including Natural Gas Systems</b>	W.M. Haynes, <i>NIST</i> R.T Jacobsen, <i>INEEL</i>
<b>Properties of Polymers and Mesoscopic Systems</b>	C.C. Han, <i>NIST</i> K. Migler, <i>NIST</i> F.W. Starr, <i>NIST</i>
<b>Properties of Solids</b>	N.T. Wright, <i>Michigan State University</i>
<b>Properties of Working Fluids, Including Refrigerants</b>	M.O. McLinden, <i>NIST</i>
<b>Subsecond Thermophysics</b>	G. Pottlacher, <i>TU-Graz</i>
<b>Theory and Modeling of Thermophysical Properties</b>	J.C. Rainwater, <i>NIST</i>
<b>Thermophysical Properties of Biomaterials</b>	J.J. Alvarado-Gil, <i>CINVESTAV IPN</i> F.M. Vargas-Luna, <i>IFUG</i>
<b>Thin Film Properties</b>	P. Norris, <i>University of Virginia</i> A.N. Smith, <i>U.S. Naval Academy</i>
<b>Wetting and Interfaces</b>	C.J. Boulter, <i>Heriot-Watt University</i>



## KEY TO CONFERENCE SPECIFIC BUILDINGS

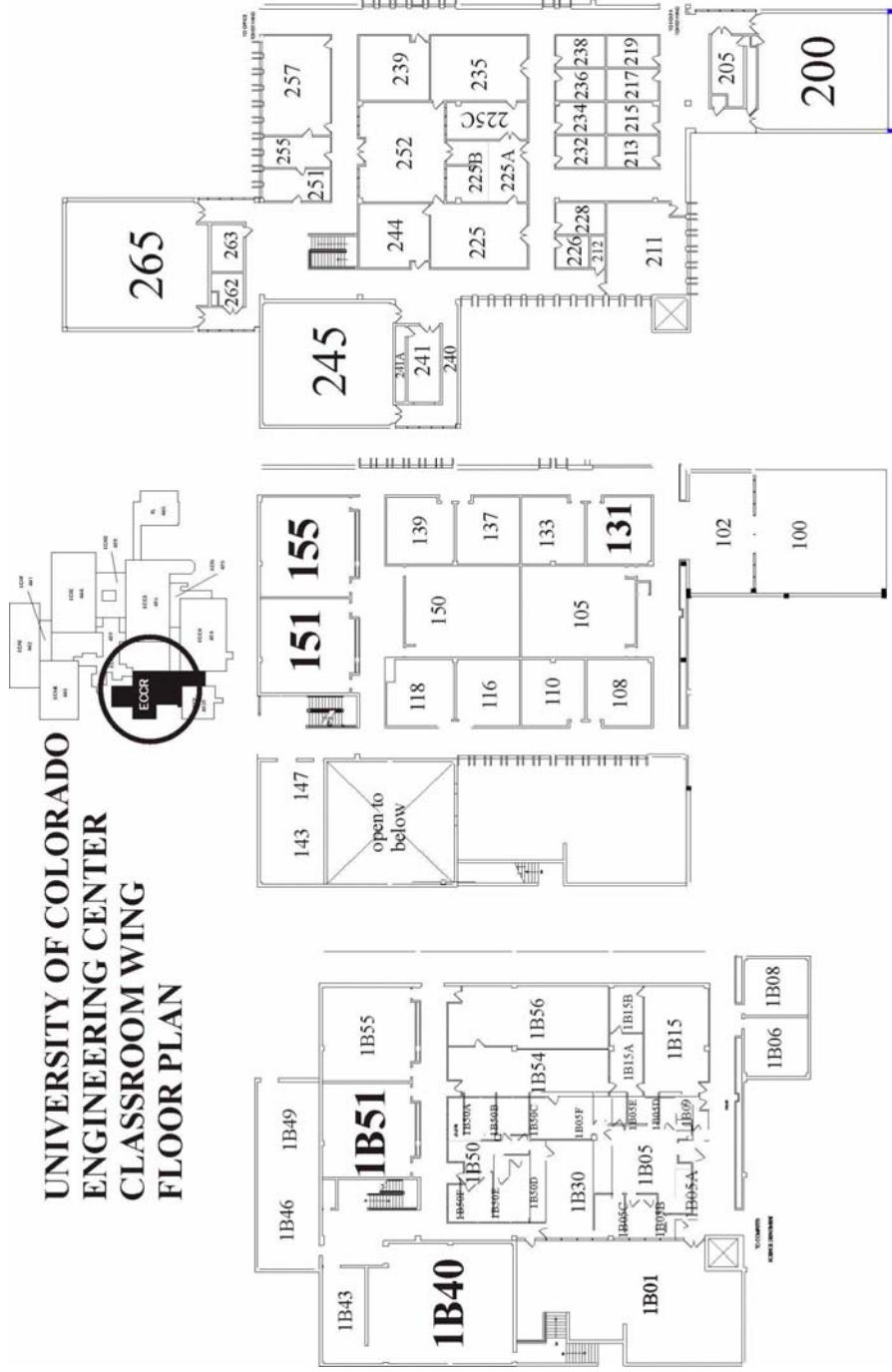
- 13 Coors Event Center
- 23 Engineering Center
- 60 Mathematics Building
- 63 Muenzinger Psychology
- 93 University Club
- 100 Andrews Hall Kittredge Complex
- 101 Arnett Hall Kittredge Complex
- 106 Buckingham Hall Kittredge Complex
- 116 Kittredge Commons
- 117 Kittredge West Hall (Kittredge Complex)
- 124 Smith Hall Kittredge Complex

Key to all buildings on reverse

## **University Buildings**

- |   |  |
|---|--|
| 1. Administrative and Research Center         | 65. Museum of Natural History, Univ. of Colo |
| 2. Armory                                     | 66. Norlin Library                           |
| 3. Balch Fieldhouse                           | 67. Nuclear Physics Laboratory               |
| 4. Benson Earth Sciences Building             | 68. Old Main                                 |
| 5. Business                                   | 69. Page Foundation Center                   |
| 6. Carlson Gymnasium                          | 70. Police and Parking Services              |
| 7. Ctr for Astrophysics and Space Astronomy   | 71. Porter Biosciences                       |
| 8. Clare Small Arts and Sciences              | 72. Power House                              |
| 9. College Inn Conference Center              | 73. Qwest Research Park                      |
| 10. Computing Center                          | 74. Ramaley Biology                          |
| 11. Continuing Education                      | 75. Regent Administrative Center             |
| 12. Coop. Inst. for Res. in Envir. Sciences   | 76. Regent Drive AutoPark                    |
| 13. Coors Events/Conference Center            | 77. Res Lab, Litman RL1                      |
| 14. Cristol Chemistry and Biochemistry        | 78. Res Lab, WICHE (RL2)                     |
| 15. Dal Ward Athletic Center                  | 79. Res Lab, Life Science RL4                |
| 16. Denison Arts and Sciences                 | 80. Res Lab (Marine St Science Center) RL6   |
| 17. Discovery Learning Center                 | 81. Research Park Greenhouse                 |
| 18. Duane Physics and Astrophysics            | 82. Sibell Wolfe Fine Arts                   |
| 19. Eaton Humanities Building                 | 83. Sommers-Bausch Observatory               |
| 20. Economics (F-3)                           | 84. Speech, Language, and Hearing Sciences   |
| 21. Education (G-4)                           | 85. Stadium Offices                          |
| 22. Ekeley Sciences                           | 86. Stadium Ticket Building                  |
| 23. Engineering Center                        | 87. Student Recreation Center                |
| 24. Environmental Design                      | 88. Sybase                                   |
| 25. Envir. Health and Safety Ctr              | 89. Telecommunications Building              |
| 26. Euclid Avenue AutoPark                    | 90. Temporary Building No.1                  |
| 27. Family Housing Children's Center          | 91. Transportation Center                    |
| 28. Fam. Housing Children's Ctr Colo.Court    | 92. University Admin. Ctr and Annex          |
| 29. Fiske Planetarium and Science             | 93. University Club                          |
| 30. Fleming Law                               | 94. University Memorial Center               |
| 31. Folsom Stadium                            | 95. University Theatre                       |
| 32. Gamow Tower (F-7) (DUAN)                  | 96. Wardenburg Health Center                 |
| 33. Gates Woodruff Women's Studies Cottage    | 97. Willard Administrative                   |
| 34. Grounds and Service Center                | 98. Woodbury Arts and Sciences               |
| 35. Guggenheim Geography                      |  |
| 36. Hale Science (E-3)                        |  |
| 37. Health Physics Laboratory                 | 99. Aden Hall Quadrangle                     |
| 38. Hellmens Arts and Sciences/Rippon Theatre | 100. Andrews Hall Kittredge Complex          |
| 39. Housing System Maintenance                | 101. Arnett Hall Kittredge Complex           |
| 40. Housing System Service Center             | 102. Athens Court                            |
| 41. Imig Music                                | 103. Athens North Court                      |
| 42. Inst. for Behavioral Genetics             | 104. Baker Hall                              |
| 43. Inst. Behavioral Science No. 2            | 105. Brackett Hall Quadrangle                |
| 44. IBS No. 2                                 | 106. Buckingham Hall Kittredge Complex       |
| 45. IBS No. 3                                 | 107. Cheyenne Arapaho Hall                   |
| 46. IBS No. 4                                 | 108. Cockerell Hall Quadrangle               |
| 47. IBS No. 5                                 | 109. Colorado Court                          |
| 48. IBS No. 6                                 | 110. Crosmans Hall Quadrangle                |
| 49. IBS No. 7                                 | 111. Darley Commons Williams Village         |
| 50. IBS No. 8                                 | 112. Darley Towers Williams Village          |
| 51. Integrated Teaching and Learning Lab      | 113. Faculty-Staff Court                     |
| 52. International English Center              | 114. Farrand Hall                            |
| 53. Joint Inst. for Laboratory Astrophysics   | 115. Hallet Hall                             |
| 54. Ketchum Arts and Sciences                 | 116. Kittredge Commons Kittredge Complex     |
| 55. Koenig Alumni Center                      | 117. Kittredge West Hall Kittredge Complex   |
| 56. Lab for Atmospheric and Space Physics     | 118. Libby Hall                              |
| 57. LASP Space Technology Research Center     | 119. Marina Court                            |
| 58. Lesser House                              | 120. Newton Court                            |
| 59. Macky Auditorium                          | 121. Reed Hall (H-10) (REED)                 |
| 60. Mathematics Building                      | 122. Sewall Hall (D-5) (SWLL)                |
| 61. MCD Biology                               | 123. Smiley Court (L-1) (SMCT)               |
| 62. McKenna Languages                         | 124. Smith Hall Kittredge Complex            |
| 63. Muenzinger Psychology                     | 125. Stearns Towers Williams Village         |
| 64. Museum Collections (Bruce Curtis Bldg)    | 126. Willard Hall South Wing                 |

**UNIVERSITY OF COLORADO  
ENGINEERING CENTER  
CLASSROOM WING  
FLOOR PLAN**



## **PROGRAM SUMMARY TABLE**

**Monday, June 23**

<b>Morning (8:30 – 12:10)</b>	<b>(Page 1)</b>	<b>Room</b>
• Plenary Session		Math-100
<b>Afternoon – 1 (1:45– 3:30)</b>	<b>(Pages 2 - 8)</b>	<b>Room</b>
• Databases and Data Correlation 1 – Correlations 1		Eng-151
• Photothermal and Photoacoustic Techniques for Property Measurements 1 – Soret Effect and Miscellaneous		Eng-200
• Properties for Environmental Applications 1		Eng-245
• Properties of Fuels, including Natural Gas Systems 1 – Natural Gas Mixtures		Eng-1B40
• Subsecond Thermophysics 1 – Techniques 1		Eng-1B51
• Theory and Modeling of Thermophysical Properties 1 – Equations of State		Eng-265
• Phase Transitions/Metastable Fluids/Critical Phenomena 1 – Metastable States and Instability 1 ( <i>will start at 2:30 pm</i> )		Math-100
<b>Afternoon – 2 (3:50 – 5:35)</b>	<b>(Pages 9 - 16)</b>	<b>Room</b>
• Databases and Data Correlation 2 - Equations of State		Eng-151
• Phase Transitions/Metastable Fluids/Critical Phenomena 2 – Metastable States and Instability 2		Math-100
• Photothermal and Photoacoustic Techniques for Property Measurements 2 – Methods and Characterization		Eng-200
• Properties for Environmental Applications 2		Eng-245
• Properties of Fuels, including Natural Gas Systems 2 - Experimental Measurements and Analysis		Eng-1B40
• Subsecond Thermophysics 2 - Emissivity		Eng-1B51
• Theory and Modeling of Thermophysical Properties 2 – Thermodynamic Theory		Eng-265
<b>Evening (7:30 – 9:15)</b>	<b>(Pages 17 - 23)</b>	<b>Room</b>
• Databases and Data Correlation 3 – Correlations 2		Eng-151
• Fluid Property Measurements 1 – Phase Equilibria 1		Eng-245
• Phase Transitions/Metastable Fluids/Critical Phenomena 3 – Phase Transitions in Confined Systems 1		Eng-265
• Photothermal and Photoacoustic Techniques for Property Measurements 3 – Surface Waves and Semiconductors		Eng-200
• Properties of Fuels, including Natural Gas Systems 3 - Methane Hydrates		Eng-1B40
• Subsecond Thermophysics 3 – Techniques 2		Eng-1B51
• Theory and Modeling of Thermophysical Properties 3 – Associating Fluids		Eng-155

**Tuesday, June 24**

**Morning – 1 (8:30 – 10:15)      (Pages 24 -30)**

- Databases and Data Correlation 4 – Databases 1
- Fluid Property Measurements 2 – Phase Equilibria 2
- Phase Transitions/Metastable Fluids/Critical Phenomena 4 –  
Phase Transitions in Confined Systems 2
- Photothermal and Photoacoustic Techniques for Property  
Measurements 4 – Thermal Characterization and Methods
- Properties for Metallurgical Process Design 1
- Properties of Fuels, including Natural Gas Systems 4 – Chemical  
Behavior and Phase Equilibrium
- Theory and Modeling of Thermophysical Properties 4 – Transport  
Properties

**Room**

Eng-151

Eng-245

Eng-265

Eng-200

Eng-1B51

Eng-1B40

Eng-155

**Morning – 2 (10:35 – 12:20)      (Pages 31 - 37)**

- Databases and Data Correlation 5 – Databases 2
- Fluid Property Measurements 3 – Caloric and Thermophysical  
Properties
- Phase Transitions/Metastable Fluids/Critical Phenomena 5 –  
Phase Transitions and Critical Phenomena in Ionic Systems 1
- Properties for Metallurgical Process Design 2
- Properties of Fuels, including Natural Gas Systems 5 – Transport  
Properties and Impurities
- Theory and Modeling of Thermophysical Properties 5 – Theory  
of Solids
- Thin Film Properties 1

**Room**

Eng-151

Eng-245

Eng-265

Eng-1B51

Eng-1B40

Eng-155

Eng-200

**Afternoon – 1 (1:45 – 3:30)      (Pages 38 - 44)**

- Biothermophotonic Diagnostics and Imaging 1
- Fluid Property Measurements 4 – Transport Properties
- Phase Transitions/Metastable Fluids/Critical Phenomena 6 –  
Phase Transitions and Critical Phenomena in Ionic Systems 2
- Properties for Chemical Process Design 1
- Properties for Metallurgical Process Design 3
- Properties of Fuels, including Natural Gas Systems 6 – Petroleum  
Constituents and Reservoirs
- Theory and Modeling of Thermophysical Properties 6 –  
Simulation-Based Studies

**Room**

Eng-151

Eng-245

Eng-265

Eng-200

Eng-1B51

Eng-1B40

Eng-155

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**Tuesday, June 24 (continued)**

**Afternoon – 2 (3:45 – 6:15) (Page 45)**

- Touloukian Award Ceremony (Muenzinger)
- Touloukian Award Reception (Muenzinger Plaza)

**Evening (Open)**

## Wednesday, June 25

**Morning – 1 (8:30 – 10:15) (Pages 46 – 52)**

- Inverse Problems in Thermophysics 1 – Depth Profiling of Thermal Properties
- Ionic Liquids and Other Solvents 1
- Optical and Thermal Radiative Properties of Materials 1
- Phase Transitions/Metastable Fluids/Critical Phenomena 7 – Critical Phenomena: Theory and Simulations 1
- Properties for Chemical Process Design 2
- Properties of Working Fluids, including Refrigerants 1 – Transport Properties 1
- Wetting and Interfaces 1 - Substrate Structure and Geometry

**Room**

- Eng-151
- Eng-245
- Eng-1B51
- Math -100
- Eng-200
- Eng-1B40
- Eng-265

**Morning – 2 (10:35 – 12:20) (Pages 53 - 63)**

- Inverse Problems in Thermophysics 2 – Depth Profiling of Optical and Other Physical Properties
- Ionic Liquids and Other Solvents 2
- Optical and Thermal Radiative Properties of Materials 2
- Phase Transitions/Metastable Fluids/Critical Phenomena 8 – Critical Phenomena: Theory and Simulations 2
- Properties for Chemical Process Design 3
- Properties of Working Fluids, including Refrigerants 2 – Transport Properties 2
- Software Demonstrations 1
- Wetting and Interfaces 2 – General Theory

**Room**

- Eng-151
- Eng-245
- Eng-1B51
- Math-100
- Eng-200
- Eng-1B40
- UMC 235
- Eng-265

**Afternoon – 1 (1:45 – 3:30) (Pages 64 - 103)**

- Posters 1 (UMC Ballroom and UMC 235)
- Software Demonstrations 2

**Room**

- UMC
- UMC 235

-continued on next page -

**Wednesday, June 25 (continued)**

<b>Afternoon – 2 (3:50 – 5:35)</b>	<b>(Pages 104 – 111)</b>	<b>Room</b>
• Inverse Problems in Thermophysics 3 – Other Inverse Problems in Thermophysics		Eng-151
• Novel Instrumentation and Measurement Techniques 1 – Metrology		Eng-245
• Phase Transitions/Metastable Fluids/Critical Phenomena 9 – Phase Transitions and Critical Phenomena: Thermal Studies 1		Math-100
• Properties for Chemical Process Design 4		Eng-200
• Properties of Working Fluids, including Refrigerants 3 – Phase Equilibria and the Critical Region		Eng-1B40
• Software Demonstrations 3		UMC 235
• Theory and Modeling of Thermophysical Properties 7 – Other Topics		Eng-1B51
• Wetting and Interfaces 3 – Mixtures and Emulsions		Eng-265
<b>Evening (7:30 – 9:15)</b>	<b>(Pages 112 - 118)</b>	<b>Room</b>
• Molecular Simulation 1 – Non-equilibrium Molecular Dynamics		Math-100
• Novel Instrumentation and Measurement Techniques 2 – Solid Systems 1		Eng-245
• Phase Transitions/Metastable Fluids/Critical Phenomena 10 – Phase Transitions and Critical Phenomena: Thermal Studies 2		Eng-265
• Properties for Chemical Process Design 5		Eng-200
• Properties of Working Fluids, including Refrigerants 4 – Equations of State		Eng-1B40
• Thermophysical Properties of Biomaterials 1 – Macroscopic Systems		Eng-151
• Wetting and Interfaces 4 - Experiment		Eng-155

**Thursday, June 26**

<b>Morning – 1 (8:30 – 10:15)</b>	<b>(Pages 119 - 127)</b>	<b>Room</b>
• Molecular Simulation 2 – Interfacial Systems and Adsorption		Eng-200
• NIST Thermodynamics Research Center Consortium Annual Workshop 1 – Open Session		CECC-4
• Non-Destructive Evaluation with Thermophysics 1		Eng-1B40
• Novel Instrumentation and Measurement Techniques 3 – Solid Systems 2		Eng-245
• Optical and Thermal Radiative Properties of Materials 3		Eng-1B51
• Phase Transitions/Metastable Fluids/Critical Phenomena 11 – Phase Equilibria and Equations of State		Math-100
• Thermophysical Properties of Biomaterials 2 – Microscopic Level 1		Eng-151
• Wetting and Interfaces 5 – Simulation		Eng-265
<b>Morning – 2 (10:35 – 12:20)</b>	<b>(Pages 128 – 135)</b>	<b>Room</b>
• Molecular Simulation 3 – Phase Equilibria		Eng-200
• NIST Thermodynamics Research Center Consortium Annual Workshop 2 – Open Session		CECC-4
• Non-Destructive Evaluation with Thermophysics 2		Eng-151
• Novel Instrumentation and Measurement Techniques 4 – Transport 1		Eng-245
• Optical and Thermal Radiative Properties of Materials 4		Eng-1B51
• Phase Transitions/Metastable Fluids/Critical Phenomena 12 – Critical Phenomena: Acoustic Studies and Viscosity		Math-100
• Properties of Aqueous Systems 1 – High-Temperature Electrolytes		Eng-1B40
• Properties of Solids 1 – Reference Materials		Eng-265
<b>Afternoon – 1 (1:45 – 3:30)</b>	<b>(Pages 136 - 141)</b>	<b>Room</b>
• Molecular Simulation 4 – Complex Fluids		Eng-200
• Novel Instrumentation and Measurement Techniques 5 – Transport 2		Eng-245
• Properties of Aqueous Systems 2 – High-Temperature Nonelectrolytes		Eng-1B40
• Properties of Solids 2 – Porous Solids		Eng-265
• Properties of Working Fluids, including Refrigerants 5 – Experimental Thermodynamics 1		Eng-155
• Thermophysical Properties of Biomaterials 3 – Microscopic Level 2		Eng-151

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**Thursday, June 26 (continued)**

**Afternoon – 2 (3:50 – 5:35) (Pages 142 – 148)**

- |  | <b>Room</b> |
|--|-------------|
| • Ionic Liquids and Other Solvents 3   | Math-100    |
| • Novel Instrumentation and Measurement Techniques 6 – Systems at Equilibrium 1          | Eng-245     |
| • Phenomena at Ultrashort Time/Length Scales 1   | Eng-151     |
| • Properties of Aqueous Systems 3 – Experimental   | Eng-1B40    |
| • Properties of Polymers and Mesoscopic Systems 1 – Organic-Inorganic Systems            | Eng-200     |
| • Properties of Solids 3 – Thermomechanical Interactions                                 | Eng-265     |
| • Properties of Working Fluids, including Refrigerants 6 – Experimental Thermodynamics 2 | Eng-1B51    |

**Evening (6:00 – 10:00)**

- Picnic at the National Center for Atmospheric Research (NCAR)

**Friday, June 27**

**Morning – 1 (8:30 – 10:15)      Pages (149 - 154)**

- Fluid Property Measurements 5 – Transport and Thermophysical Properties
- Novel Instrumentation and Measurement Techniques 7 – Systems at Equilibrium 2
- Properties of Aqueous Systems 4 – Modeling Phase Equilibria
- Properties of Polymers and Mesoscopic Systems 2 – Thermal Kinetics and Gas Solubility
- Properties of Solids 4 – Modeling and Theory
- Properties of Working Fluids, including Refrigerants 7 – Experimental Thermodynamics 3

**Room**

Eng-265

Eng-245

Eng-1B40

Eng-200

Eng-155

Eng-1B51

**Morning – 2 (10:35 – 12:20)      Pages (155 - 159)**

- Fluid Property Measurements 6 – PVT, Critical, and Thermophysical Properties
- Novel Instrumentation and Measurement Techniques 8 – Systems at Equilibrium 3
- Properties of Aqueous Systems 5
- Properties of Polymers and Mesoscopic Systems 3 – Polymer Thermodynamics
- Properties of Solids 5 – Crystals

**Room**

Eng-265

Eng-245

Eng-1B40

Eng-200

Eng-155

## Monday, June 23, 2003

### *Plenary 1*

Chair: D. G. Friend and A. Mandelis

**Morning - 1: 8:30 – 12:10**

**Room: Math 100**

**8:30 AM      Introductory Remarks**

D.G. Friend\*, *National Institute of Standards and Technology,  
Boulder, CO, U.S.A.*

**Welcome**

Zelda Chapman Bailey\*, *Director of the National Institute of  
Standards and Technology Boulder Laboratories, Boulder, CO,  
U.S.A.*

**Announcement of the Touloukian Award Winners**

R.T Jacobsen\*, *Idaho National Engineering and Environmental  
Laboratory, Idaho Falls, ID, U.S.A.*

**9:00 AM      The Puzzling Behavior of Normal, Supercooled, and Glassy  
Water (Invited)**

H. Eugene Stanley\*, *Boston University, Boston, MA, U.S.A.*

**9:55 AM      Coffee Break**

**10:20 AM      Mesoscopic and Nanoscale Thermodynamics:  
Fundamentals for Emerging Technologies (Invited)**

M.A. Anisimov\*, *University of Maryland, College Park, MD,  
U.S.A.*

**11:15 AM      Transient Grating Photoacoustics on a Silicon Chip (Invited)**

A.A. Maznev\*, *Philips Advanced Metrology Systems, Natick, MA,  
U.S.A.*

**11:55 AM      Closing Remarks**

A. Mandelis\*, *University of Toronto, Toronto, Ontario, Canada*

**Monday, June 23, 2003**

**Databases and Data Correlation 1**  
**Correlations 1**

Chair: M. L. Huber and R. L. Rowley

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-151**

- 1:50 PM Use of the DIPPR Database for the Development of QSPR  
Correlations: Solid Vapor Pressure and Heat of  
Sublimation of Organic Compounds**

B.T. Goodman\*, W.V. Wilding, J.L. Oscarson and R.L. Rowley,  
*Brigham Young University, Provo, UT, U.S.A.*

- 2:10 PM Combined Approach of Group-Contribution and Molecular  
Modeling for the Estimation of Pure Component Properties**

J. Marrero and R. Gani\*, *Technical University of Denmark,  
Lyngby, Denmark*

- 2:30 PM From Raw Physical Data to Reliable Thermodynamic Model  
Parameters**

U. Westhaus\* and R. Sass, *DECHEMA e.V., Frankfurt, Germany*

**Monday, June 23, 2003**

***Photothermal and Photoacoustic Techniques for Property Measurements 1***  
***Soret Effect and Miscellaneous***

Chair: G. Diebold

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-200**

- 1:50 PM      Polymer Mass and Thermal Diffusion at a Consolute Critical Point and in the Vicinity of the Glass Transition (Invited)**

W. Enge, M. Rauch and W. Köhler\*, *Universität Bayreuth, Bayreuth, Germany*

- 2:30 PM      Thermochemical Property Measurements of Hydrogen Peroxide and the Hydroxyl Radical in Aqueous Solution**

D.M. Camaioni, N. Foster-Mills, A.K. Brown and T. Autrey\*, *Pacific Northwest National Laboratory, Richland, WA, U.S.A.*

- 2:50 PM      Photoacoustic Measurements at Elevated Temperatures**

X. Xu\* and C. Cheng, *Purdue University, West Lafayette, IN, U.S.A.*

- 3:10 PM      Concentration Shock Waves Generated by Thermal Diffusion**

G.J. Diebold\* and S. Danworaphong, *Brown University, Providence, RI, U.S.A.* and W. Craig, *McMaster University, Hamilton, Ontario, Canada*

**Monday, June 23, 2003**

***Properties for Environmental Applications 1***

Chair: A. Anderko

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-245**

- 1:50 PM Solubility in Water and Phase Partitioning of Highly Hydrophobic Organic Solutes at Environmental Conditions (Invited)**

V. Majer\* and G. Bergin, *Université Blaise Pascal, Aubière, France*, J. Sedlbauer, *Technical University of Liberec, Liberec, Czech Republic* and M.F. Costa-Gomes, *Université Blaise Pascal, Aubière, France*

- 2:30 PM Group Contribution Values at 298.15 K and 0.1 MPa for Thermodynamic Functions of Hydration of Ethers and Esters**

A.V. Plyasunov\*, N.V. Plyasunova and E.L. Shock, *Arizona State University, Tempe, AZ, U.S.A.*

- 2:50 PM Temperature Dependence of Infinite Dilution Activity Coefficients and Henry's Law Constants of Some Polycyclic Aromatic Hydrocarbons in Water**

J. Reza\* and A. Trejo, *Instituto Mexicano del Petróleo, México D.F., Mexico*

- 3:10 PM Thermophysical Behavior of Cationic Surfactant Solutions: Complex Formation Study**

K. Ballerat-Busserolles\*, G. Roux-Desgranges and A.H. Roux, *Université Blaise Pascal, Aubière, France* and E.M. Woolley, *Brigham Young University, Provo, UT, U.S.A.*

**Monday, June 23, 2003**

**Properties of Fuels, including Natural Gas Systems 1**  
**Natural Gas Mixtures**

Chair: R. T Jacobsen and W. M. Haynes

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-1B40**

- 1:50 PM Development of a Reference Equation of State for Natural Gases and Other Multicomponent Mixtures Covering the Gas and Liquid Region Including the Vapor-Liquid Phase Equilibrium (Invited)**

O. Kunz\* and W. Wagner, *Ruhr-Universität Bochum, Bochum, Germany* and M. Jaeschke, *Ruhrgas AG, Dorsten, Germany*

- 2:30 PM Phase and Interfacial Tension Behavior of Certain Model Gas Condensates: Measurements and Modeling**

L.J. Florusse and E.J.M. Straver, *Delft University of Technology, Julianalaan, The Netherlands*, S. Degrange, *Gaz de France, Saint Denis la Plaine, France*, L.E. Urlic, *PLAPIQUI - PIDCOP, Bahia Blanca, Argentina* and C.J. Peters\*, *Delft University of Technology, Delft, The Netherlands*

- 2:50 PM Method for Estimating the Dielectric Constant of Natural Gas Mixtures**

A.H. Harvey\* and E.W. Lemmon, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

- 3:10 PM Thermodynamic Property Model for Binary Mixtures of Methane and Hydrogen Sulfide**

N. Sakoda\* and M. Uematsu, *Keio University, Yokohama, Japan*

**Monday, June 23, 2003**

**Subsecond Thermophysics 1**  
**Techniques 1**

Chair: G. Pottlacher and D. Basak

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-1B51**

- 1:50 PM Vaporization Kinetics in Exploding Tungsten Wires at the Heating Rates of 1 - 10 K/ps (Invited)**

A.D. Rakhel\*, *Russian Academy of Sciences, Moscow, Russia*  
and G.S. Sarkisov, *Ktech Corporation, Albuquerque, NM, U.S.A.*

- 2:30 PM Development of a Near-Surface Alloy Composition Anomaly**

Y.W. Kim\*, *Lehigh University, Bethlehem, PA, U.S.A.*

- 2:50 PM Validation of a New High-Speed Fiber-Coupled Four-Wavelength Infrared Pyrometer in the Range of 505 K to 1234 K by a Pulse-Heating Technique, using the Melting Points of Tin, Zinc, Aluminum, and Silver as Reference Points**

K. Boboridis\*, A. Seifter and A.W. Obst, *Los Alamos National Laboratory, Los Alamos, NM, U.S.A.* and D. Basak, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

- 3:10 PM Advances in Measurements of the Melting Transition in Stoichiometric and Non-stoichiometric  $\text{UO}_2$**

D. Manara\* and M. Sheindlin, *European Commission, Karlsruhe, Germany* and M. Lewis, *University of Warwick, Coventry, United Kingdom*

**Monday, June 23, 2003**

**Theory and Modeling of Thermophysical Properties 1**  
*Equations of State*

Chair: J. C. Rainwater

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-265**

- 1:50 PM A Priori Prediction of Pure Component and Mixture Properties using COSMO-RS**

O. Spuhl\* and W. Arlt, *Technische Universität Berlin, Berlin, Germany*

- 2:10 PM PSRK Group Contribution Method for Predicting Phase Equilibria of Gas Hydrates**

J.-H. Yoon\*, Y. Yamamoto, T. Komai and T. Kawamura, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

- 2:30 PM Combined Helmholtz Energy, Corresponding States and Local Composition Model for Fluid Mixtures**

A. De Mendoza and J.F. Estela-Uribe\*, *Universidad Javeriana Cali, Cali, Colombia* and J.P.M. Trusler, *Imperial College of Science, Technology and Medicine, London, United Kingdom*

- 2:50 PM An Approach to Calculate Thermodynamic Properties of Mixtures Including Propane, n-Butane and Iso-Butane**

J. Avsec\*, *University of Maribor, Maribor, Slovenia*, K. Watanabe, *Keio University, Yokohama, Japan* and M. Marcic, *University of Maribor, Maribor, Slovenia*

- 3:10 PM Simultaneous Determination of Thermodynamic and Transport Properties from Speed-of-Sound Measurements in Gaseous Hydrofluorocarbons**

K. Okabe\* and H. Sato, *Keio University, Yokohama, Japan*

**Monday, June 23, 2003**

***Phase Transitions/Metastable Fluids/Critical Phenomena 1***  
***Metastable States and Instability 1***

Chair: M. A. Anisimov

**Afternoon - 1: 2:30 - 3:30**

**Room: Math 100**

- 2:35 PM      From Photopyroelectric AC Calorimetry of Phase  
Transitions to Thermal Spectroscopy of Glass Forming  
Liquids (Invited)**

J. Thoen\*, *Katholieke Universiteit, Leuven, Belgium*

- 3:15 PM      James Thomson and the Continuity of the Solid, Liquid,  
and Gaseous States**

A. Laesecke\*, *National Institute of Standards and Technology,  
Boulder, CO, U.S.A.*

**Monday, June 23, 2003**

**Databases and Data Correlation 2**

**Equations of State**

Chair: R. L. Rowley and M. L. Huber

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-151**

- 3:55 PM Calculation of Thermodynamic Properties of Fluid Mixtures through a Generalized Helmholtz Equation**  
A. Fenghour and I. Warsame, *Imperial College of Science, Technology and Medicine, London, United Kingdom* and W.A. Wakekam\*, *University of Southampton, Southampton, Highfield, United Kingdom*
- 4:15 PM AUTOFIT: A Program for Fully Automated Fitting of Helmholtz Equations of State**  
C. Bonsen, *Ruhr-Universität Bochum, Bochum, Germany*, R. Span\*, *Universität Paderborn, Paderborn, Germany* and W. Wagner, *Ruhr-Universität Bochum, Bochum, Germany*
- 4:35 PM A Fundamental Equation for the Calculation of the Thermodynamic Properties of Ethanol**  
H.E. Dillon, *Pacific Northwest National Laboratory, Richland, WA, U.S.A.* and S.G. Penoncello\*, *University of Idaho, Moscow, ID, U.S.A.*
- 4:55 PM A Rapid Genetic Optimization Technique for Rational Thermodynamic Modeling Having Reliable Third Virial Coefficients**  
I.M. Astina\* and H. Sato, *Keio University, Yokohama, Japan*
- 5:15 PM The Equation of State and Thermodynamic Properties of Cesium Vapors at High Temperatures**  
A.G. Mozgovoy\*, L.R. Fokin and V.N. Popov, *Russian Academy of Sciences, Moscow, Russia*

**Monday, June 23, 2003**

**Phase Transitions/Metastable Fluids/Critical Phenomena 2**

**Metastable States and Instability 2**

Chair: J. Thoen and M. A. Anisimov

**Afternoon - 2: 3:50 - 5:35**

**Room: Math 100**

**3:55 PM Nucleation Processes Close to the Spinodal**

C.E. Cordeiro\*, J.B. Silva, S. Moss de Oliveira, A. Delfino and S. Martins, *Universidade Federal Fluminense, Niteroi, Brazil*

**4:15 PM Dependence of Concentrations of Phases on the Amplitude of the External Field in the Domain of Metastability of Both Phases**

Yu. Dolinsky\* and T. Elperin, *Ben-Gurion University of the Negev, Beer-Sheva, Israel*

**4:35 PM Surface Tension of Nuclei in Fluid Phases**

V.G. Baidakov, G.Sh. Boltachev\* and A.M. Kaverin, *Institute of Thermal Physics, Ekaterinburg, Russia*

**4:55 PM Equation of State for Stable and Metastable Argon**

V.G. Baidakov\*, G.Sh. Boltachev and S.P. Protsenko, *Institute of Thermal Physics, Ekaterinburg, Russia*

**Monday, June 23, 2003**

***Photothermal and Photoacoustic Techniques for Property Measurements 2***  
***Methods and Characterization***

Chair: G. Diebold

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-200**

**3:55 PM Photothermal Lens Spectrometry in Small Cylinders**

S.E. Bialkowski\*, *Utah State University, Logan, UT, U.S.A.*

**4:15 PM Photothermal Characterization of Functionally Graded Materials--Design of Optimal Experiments**

K.D. Cole\*, *University of Nebraska, Lincoln, NE, U.S.A.*

**4:35 PM Novel Method for Observation of the Thermal Properties of Thin Films with a Modulated CO<sub>2</sub> Laser**

Y. Shimizu\* and J. Ishii, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*, K. Shinzato, *Bethel Co., Ibaraki, Japan* and T. Baba, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

**4:55 PM Propogation of Surface Acoustic Pulses Generated by a Femtosecond Laser in Thin Films on Solid Substrates**

A.A. Kolomenskii, S.N. Jerebtsov and H.A. Schuessler\*, *Texas A&M University, College Station, TX, U.S.A.*

**5:15 PM Time-Resolved Optoacoustic Spectroscopy of Water Vapor and Soot Aerosol in Atmospheric Air**

B.A. Tikhomirov\*, *Russian Academy of Sciences, Tomsk, Russia*

**Monday, June 23, 2003**

***Properties for Environmental Applications 2***

Chair: A. Anderko

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-245**

- 3:55 PM      Zeta Potential at the Metal Oxide-Aqueous Solution Interface at Temperatures up to 200 °C**

S.N. Lvov\*, X.Y. Zhou, M.V. Fedkin and K.H. Strass,  
*Pennsylvania State University, University Park, PA, U.S.A.*

- 4:15 PM      Molecular Dynamics Simulations of Aqueous Species in the System H<sub>2</sub>O-CO<sub>2</sub>-NaCl over Wide Ranges of Temperatures, Pressures, and Compositions**

A.G. Kalinichev\* and R.J. Kirkpatrick, *University of Illinois at Urbana-Champaign, Urbana, IL, U.S.A.*

- 4:35 PM      Heat Transport and Thermal Expansion of Electrochromic Glazing Systems with Voltage Controlled Transmission due to Solar Irradiation**

U. Fischer\*, *Brandenburg Technical University, Cottbus, Germany*

- 4:55 PM      Thermodynamic and Spectroscopic Analysis of Pure and Mixed Gas Hydrates Formed in Porous Media**

D.Y. Kim\*, Y. Seo, J.W. Lee and H. Lee, *Korea Advanced Institute of Science and Technology, Daejeon, Korea* and H.K. Bae, *Yeungnam University, Kyongsan, Korea*

**Monday, June 23, 2003**

**Properties of Fuels, including Natural Gas Systems 2**  
*Experimental Measurements and Analysis*

Chair: W. M. Haynes and R. T Jacobsen

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-1B40**

- 3:55 PM      GERG Project: Development and Set-up of a New Reference Calorimeter (Invited)**

M. Jaeschke\*, *Ruhrgas AG, Dorsten, Germany*, A. Benito, *Enagas, Zaragoza, Spain*, P.L. Cremonesi, *Snam Rete Gas, Milanese, Italy*, J.-R. Filtz, *BNM-LNE, Paris, France*, R. Forster, *Ruhrgas AG, Dorsten, Germany*, B. Hay, *BNM-LNE, Paris, France*, F. Haloua, *BNM - Laboratoire National D'Essais, Trappes, France*, S. Sarge, *Physikalisch-Technische Bundesanstalt, Braunschweig, Germany*, S. Loubat, *Gaz de France, St. Denis, France* and P. Ulbig, *Physikalisch Technische Bundesanstalt, Braunschweig, Germany*

- 4:35 PM      Isochoric Heat Capacity Measurements for a CO<sub>2</sub> + n-Decane Mixture in the Near-Critical and Supercritical Regions**

N.G. Polikhronidi, R.G. Batyrova and I.M. Abdulagatov\*, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*, J.W. Magee, *National Institute of Standards and Technology, Boulder, CO, U.S.A.* and G.V. Stepanov, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

- 4:55 PM      A Micro-Electro-Mechanical System (MEMS) for the Measurement of Density and Viscosity**

A.R.H. Goodwin\*, *Schlumberger Cambridge Research, Cambridge, United Kingdom*, E.P. Donzier, *Schlumberger-Doll Research, Ridgefield, CT, U.S.A.*, M. Manrique de Lara, *Schlumberger Cambridge Research, Cambridge, United Kingdom* and O. Vancauwenberghe, *Schlumberger-Doll Research, Ridgefield, CT, U.S.A.*

-continued on next page-

**Monday, June 23, 2003**

***Properties of Fuels, including Natural Gas Systems 2***

***Experimental Measurements and Analysis***

***(continued)***

Chair: W. M. Haynes and R. T Jacobsen

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-1B40**

**5:15 PM      Viscosity and Liquid Density of Asymmetric n-Alkane  
Mixtures: Measurement and Modelling**

A.J. Queimada\*, I.M. Marrucho and J.A.P. Coutinho,  
*Universidade de Aveiro, Aveiro, Portugal* and E.H. Stenby,  
*Technical University of Denmark, Lyngby, Denmark*

**Monday, June 23, 2003**

***Subsecond Thermophysics 2***

***Emissivity***

Chair: G. Pottlacher and Y. Kim

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-1B51**

- 3:55 PM      Normal Spectral Emissivity at a Wavelength of 684.5 nm and Thermophysical Properties of Liquid Molybdenum**

C. Cagran\*, B. Wilthan and G. Pottlacher, *Technische Universität Graz, Graz, Austria*

- 4:15 PM      Radiance Temperatures and Normal Spectral Emittances (in the Wavelength Range of 1500 nm to 5000 nm) of Tin, Zinc, Aluminum, and Silver at their Melting Points by a Pulse-Heating Technique**

K. Boboridis\*, A. Seifter and A.W. Obst, *Los Alamos National Laboratory, Los Alamos, NM, U.S.A.* and D. Basak, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

- 4:35 PM      Emissivity Measurements on Metallic Surfaces with Various Degrees of Roughness: A Comparison of Laser Polarimetry and Integrating Sphere Reflectometry**

A. Seifter, K. Boboridis and A.W. Obst\*, *Los Alamos National Laboratory, Los Alamos, NM, U.S.A.*

**Monday, June 23, 2003**

**Theory and Modeling of Thermophysical Properties 2**  
*Thermodynamic Theory*

Chair: R. J. Sadus and J. C. Rainwater

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-265**

- 3:55 PM      Dual Critical Points, Etc., in Simple Fluids from the Perspective of (Approximate) Renormalization Theory (Invited)**  
J.A. White\* and K.P. Tewari, *American University, Washington, D.C., U.S.A.*
- 4:35 PM      Unified Density Functional Theory of Complex Fluids**  
J. Wu\*, *University of California, Riverside, CA, U.S.A.*
- 4:55 PM      Adsorption of Associating Fluids at Active Surfaces: A Density Functional Theory**  
S. Tripathi\* and W.G. Chapman, *Rice University, Houston, TX, U.S.A.*

**Monday, June 23, 2003**

**Databases and Data Correlation 3**  
**Correlations 2**

Chair: M. L. Huber and R. L. Rowley

**Evening: 7:30 – 9:15**

**Room: Eng-151**

- 7:35 PM A Highly Accurate Numerical Method to Determine Equilibrium Properties in Fluids from Speed of Sound Data**  
A.F. Estrada-Alexanders\* and D. Justo, *Universidad Autonoma Metropolitana, México D. F., Mexico*
- 7:55 PM Rational Representation of Thermodynamic Properties of Liquid CO<sub>2</sub> and Hydrofluorocarbons**  
M. Morimura\* and H. Sato, *Keio University, Yokohama, Japan*
- 8:15 PM Equations T(p,h), v(p,h) and T(p,s), v(p,s) for the Critical and Supercritical Regions of Water**  
K. Knobloch\* and H.-J. Kretzschmar, *University of Applied Sciences of Zittau and Görlitz, Zittau, Germany* and A. Dittmann, *Technical University of Dresden, Dresden, Germany*
- 8:35 PM New EOS for Mercury Vapor up to 1650 K and 130 MPa**  
L.R. Fokin\*, *Russian Academy of Sciences, Moscow, Russia*, V.F. Kozhevnikov, *University of Utah, Salt Lake City, UT, U.S.A.*, S.P. Naurzakov, *RRC "Kurchatov Institute", Moscow, Russia* and V.N. Popov, *Russian Academy of Sciences, Moscow, Russia*
- 8:55 PM The Influence of Molecular Form on Thermodynamic Properties and on the Equation of State of Liquid Alkanes**  
I.I. Adamenko and K.O. Moroz\*, *Kiev National Taras Shevchenko University, Kiev, Ukraine*

**Monday, June 23, 2003**

***Fluid Property Measurements 1***

***Phase Equilibria 1***

Chair: J. D. Olson

**Evening: 7:30 - 9:15**

**Room: Eng-245**

- 7:35 PM      Volatility of Dimethyl Methylphosphonate (DMMP) in Humid Air**

D.E. Tevault\*, L.C. Buettner and J.H. Buchanan, *U.S. Army Edgewood Chemical Biological Center, Aberdeen, MD, U.S.A.*

- 7:55 PM      Solubility of Oxygen in Liquid Perfluorocarbons**

A.M.A. Dias\*, J.A.P. Coutinho and I.M. Marrucho, *Universidade de Aveiro, Aveiro, Portugal*

- 8:15 PM      Solubility of Low Volatile Hydrocarbons in Supercritical Ethane**

R. Eustaquio-Rincon, A.F. Paz-Menendez and A. Trejo\*, *Instituto Mexicano del Petróleo, México D. F., Mexico*

- 8:35 PM      Measurement and Correlation of Vapor-Liquid Equilibria of Some Binary Mixtures Containing 1, 4 Dioxane**

B. Sambi Reddy, A. Ravi Prasad and Venkateswa Rao\*, *Andhra University, Visakhapatnam, India*

- 8:55 PM      Modeling Vapor-Liquid Equilibria of Binary Carbon Dioxide + Alkyl Carbonate Systems**

J.H. Im\* and M.Y. Kim, *Seoul National University, Seoul, Korea*,  
J.W. Lee, *LG Chemical, Seoul, Korea* and H.Y. Kim, *Seoul National University, Seoul, Korea*

**Monday, June 23, 2003**

**Phase Transitions/Metastable Fluids/Critical Phenomena 3**

**Phase Transitions in Confined Systems 1**

Chair: N. A. Clark and J. Thoen

**Evening: 7:30 - 9:15**

**Room: Eng-265**

- 7:35 PM      Review of Liquid Crystal Phase Transitions with Quenched Random Disorder (Invited)**

G.S. Iannacchione\*, Worcester Polytechnic Institute, Worcester, MA, U.S.A.

- 8:15 PM      Thermal Study of 8CB Liquid Crystal Confined to a Controlled-Pore Glass**

Z. Kutnjak\*, Jozef Stefan Institute, Ljubljana, Slovenia, S. Kralj, University of Maribor, Maribor, Slovenia, G. Lahajnar, Jozef Stefan Institute, Ljubljana, Slovenia and S. Zumer, University of Ljubljana, Ljubljana, Slovenia

- 8:35 PM      Diffusion in Dilute Binary Fluids Confined in Porous Structures near the Solvent Critical Point**

E.H. Chimowitz\*, S. De and Y. Shapir, University of Rochester, Rochester, NY, U.S.A.

- 8:55 PM      Influence of Space Limitations on the Critical Properties of Liquids**

I.A. Fakhretdinov\* and R.A. Gafiatullin, The Bashkir State Pedagogical University, Ufa, Russia

**Monday, June 23, 2003**

**Photothermal and Photoacoustic Techniques for Property Measurements 3**  
**Surface Waves and Semiconductors**

Chair: G. Diebold

**Evening: 7:30 - 9:35**

**Room: Eng-200**

- 7:35 PM Lock-in Common Mode Rejection Demodulation (CMRD)  
Photothermal Measurements of Thermophysical  
Properties of Solids and Fluids**

A. Mandelis\*, *University of Toronto, Toronto, Ontario, Canada*

- 7:55 PM Characterization of a Polycrystalline Material with Laser-  
Excited Nonlinear Surface Acoustic Wave Pulses**

S.N. Jerebtsov, A.A. Kolomenskii\* and H.A. Schuessler, *Texas  
A&M University, College Station, TX, U.S.A.*

- 8:15 PM Numerical Analysis of Piezoelectric Photothermal Spectra  
of Cd<sub>(1-x)</sub>Mn<sub>(x)</sub>Te Mixed Crystals -- A Multilayer Approach**

M. Malinski, *Technical University of Koszalin, Koszalin, Poland*  
and J. Zakrzewski\*, S. Legowski and H. Meczynska, *Nicolaus  
Copernicus University, Torun, Poland*

- 8:35 PM Application of a Heterogeneous Sample Model in the  
Piezoelectric Photothermal Spectroscopy of Mixed Crystals**

M. Malinski\*, *Technical University of Koszalin, Koszalin, Poland*  
and J. Zakrzewski, *Nicolaus Copernicus University, Torun,  
Poland*

- 8:55 PM Study of Relaxation Processes and Thermodynamic  
Parameters Using a Light Scattering Method in some  
Organic Aromatics and Their Solutions**

Sh. A . Abdurakhmanova\*, *Samarkand State University,  
Samarkand, Uzbekistan*

- 9:15 PM Brillouin Light Scattering in Dimethylbenzene Isomers at  
Various Temperatures**

Sh. Faizullaev\*, *Samarkand State University, Samarkand,  
Uzbekistan*

**Monday, June 23, 2003**

***Properties of Fuels, including Natural Gas Systems 3***  
***Methane Hydrates***

Chair: R. T Jacobsen and W. M. Haynes

**Evening: 7:30 - 9:15**

**Room: Eng-1B40**

- 7:35 PM      Natural Gas Hydrates: Macroscopic Application of Microscopic Measurements and Predictions (Invited)**  
E.D. Sloan\*, *Colorado School of Mines, Golden, CO, U.S.A.*
- 8:15 PM      Enthalpy of Formation of Gas Hydrates**  
K.N. Marsh\* and G. Jun, *University of Canterbury, Christchurch, New Zealand*
- 8:35 PM      Micromechanical Measurements of Hydrate Particle Attractive Forces**  
S. Yang\*, D.M. Kleehammer, Z. Huo, K.T. Miller and E.D. Sloan,  
*Colorado School of Mines, Golden, CO, U.S.A.*

**Monday, June 23, 2003**

**Subsecond Thermophysics 3  
Techniques 2**

Chair: G. Pottlacher and K. Boboridis

**Evening: 7:30 - 9:15**

**Room: Eng-1B51**

- 7:35 PM      Temperature Control of Pulse-Heated Specimens in a Kolsky Bar Apparatus using Microsecond Time-Resolved Pyrometry**

D. Basak\*, H.W. Yoon, R. Rhorer and T. Burns, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.* and T. Matsumoto, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

- 7:55 PM      A Comparison of Enthalpy Values of Selected Metals Obtained by Pulse-Heating and by Differential-Scanning-Calorimetry**

B. Wilthan\*, C. Cagran and G. Pottlacher, *Technische Universität Graz, Graz, Austria*

- 8:15 PM      Electrical Conductivity of Tungsten in a Continuous Transition from the Condensed to Gaseous State**

V.E. Fortov, V.N. Korobenko, A.D. Rakhel\* and A.I. Savvatimskiy, *Russian Academy of Sciences, Moscow, Russia*

- 8:35 PM      Measurement of Dynamically Changing Thermal Diffusivity by the Forced Rayleigh Scattering Method (Measurement of the Gelation Process)**

M. Motosuke\*, Y. Nagasaka and A. Nagashima, *Keio University, Yokohama, Japan*

- 8:55 PM      Heterogeneous Condensation of Nanoparticles of Uranium Dioxide**

T.P. Salikhov\* and V.V. Kan, *Physical Technical Institute, Tashkent, Uzbekistan*

**Monday, June 23, 2003**

**Theory and Modeling of Thermophysical Properties 3**  
**Associating Fluids**

Chair: W. V. Wilding and J. C. Rainwater

**Evening: 7:30 - 9:15**

**Room: Eng-155**

- 7:35 PM      The Effect of Quadrupolar Interactions within the SAFT Approach**

C.M. Colina\* and K.E. Gubbins, *North Carolina State University, Raleigh, NC, U.S.A.*

- 7:55 PM      An Examination of Vapor-Phase Association in the n-Aliphatic Carboxylic Acids using Density Functional Theory**

A.C. Vawdrey\*, W.V. Wilding, J.L. Oscarson and R.L. Rowley, *Brigham Young University, Provo, UT, U.S.A.*

- 8:15 PM      A Group Contribution Method for the SAFT Equation of State**

S. Tamouza\*, *Institut Francais du Petrole, Rueil Malmaison, France*, J.P. Passarello and P. Tobaly, *Universite Paris Nord, Villetteaneuse, France* and J.C. de Hemptinne, *Institut Francais du Petrole, Rueil Malmaison, France*

- 8:35 PM      Accurate Thermodynamic Properties of Gaseous Ethyl-tert-amyl and Isopropyl-tert-butyl Ethers from Density Functional Theory Results Combined with Experimental Entropy Data**

O.V. Dorofeeva\*, *Russian Academy of Sciences, Moscow, Russia* and R.M. Varushchenko and A.I. Druzhinina, *Moscow State University, Moscow, Russia*

## Tuesday, June 24, 2003

### **Databases and Data Correlation 4**

#### **Databases 1**

Chair: W. V. Wilding and M. L. Huber

**Morning - 1: 8:30 - 10:15**

**Room: Eng-151**

- 8:35 AM A Network Database System for Thermophysical Property Data**

T. Baba\*, M. Okumiya, M. Sasaki, K. Ishikawa and A. Ono,  
*National Institute of Advanced Industrial Science and Technology,  
Tsukuba, Japan*

- 8:55 AM Implementation of Dynamic Data Evaluation for Pure Compounds: Problems and Algorithms**

V.V. Diky\*, R.D. Chirico and X.J. Yan, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*, R.C. Wilhoit, *Texas A&M University, College Station, TX, U.S.A.* and M. Frenkel, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

- 9:15 AM The NIST Chemistry WebBook: A Chemical Data Resource on the Internet**

P.J. Linstrom\*, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

- 9:35 AM ENVIRON: DIPPR Project 911's Vision of Industry Standard Software for Physical Property Display and Selection**

T.N. Rogers and David Zei, *Michigan Technological University, Houghton, MI, U.S.A.*, A.K. Dewan, *Shell Global Solutions, Houston, TX, U.S.A.* and T.J. Willman\*, *Epcon International, Houston, TX, U.S.A.*

- 9:55 AM Russian Thermophysical Properties Database "Organika"**

F.S. Sirovski\*, A.M. Bogomolny and N.V. Krukovskaya, *Zelinsky Institute of Organic Chemistry, Moscow, Russia*

**Tuesday, June 24, 2003**

**Fluid Property Measurements 2**  
**Phase Equilibria 2**

Chair: J. D. Olson

**Morning - 1: 8:30 - 10:15**

**Room: Eng-245**

- 8:35 AM Solubility of n-Eicosane in Supercritical CO<sub>2</sub>. Experimental Data and Correlation With Two EOS and an Empirical Equation**

R. Eustaquio-Rincon\* and A. Trejo, *Instituto Mexicano del Petróleo, México D. F., Mexico*

- 8:55 AM Dew Point, Liquid Volume and Dielectric Constant Measurements in Vapor Mixtures of Methane + Propane and Methane + Propane + Hexane using a Microwave Apparatus**

E.F. May, T.J. Edwards\*, A.G. Mann and C. Edwards, *University of Western Australia, Crawley, W.A., Australia*

- 9:15 AM Liquid-Liquid Equilibria for Binary Systems Containing Sulfolane + Alkanes**

S. Na\* and M. Ko, *Seoul National University, Seoul, Korea*, S. Lee, *Semyung University, Chungbuk, Korea* and H.Y. Kim, *Seoul National University, Seoul, Korea*

- 9:35 AM Gas Solubility of CO<sub>2</sub> in Aqueous Solution of n-Methyldiethanolamine and Diethanolamine with 2-Amino-2-Methyl-1-Propanol**

M.E. Rebollo-Libreros\* and A. Trejo, *Instituto Mexicano del Petróleo, México D. F., Mexico*

- 9:55 AM Measurement and Correlation of Vapor-Liquid Equilibria for the n-Hexane + 1-Propanol System near the Critical Region**

B.C. Oh\*, H.S. Lee, H.Y. Shin and H.Y. Kim, *Seoul National University, Seoul, Korea*

**Tuesday, June 24, 2003**

**Phase Transitions/Metastable Fluids/Critical Phenomena 4**

**Phase Transitions in Confined Systems 2**

Chair: W. Schröer and M. A. Anisimov

**Morning - 1: 8:30 - 10:15**

**Room: Eng-265**

**8:35 AM Pseudo-Casimir Effect near Transitions in Confined Liquid Crystals**

B. Markun and S. Zumer\*, *University of Ljubljana, Ljubljana, Slovenia*

**8:55 AM Molecular Simulations of Water Adsorption in Non-Activated Graphitic Micropores: the Hysteresis Phase Diagram**

A. Striolo\* and K.E. Gubbins, *North Carolina State University, Raleigh, NC, U.S.A.*, T.D. Burchell, J.M. Simon Gruszkiewicz and A.A. Chialvo, *Oak Ridge National Laboratory, Oak Ridge, TN, U.S.A.* and P.T. Cummings, *Vanderbilt University, Nashville, TN, U.S.A.*

**9:15 AM Effect of Aerogel Confinement on the Smectic A to Smectic C Transition**

N.A. Clark\* and A.G. Rappaport, *University of Colorado, Boulder, CO, U.S.A.*

**9:35 AM Fluid Density Fluctuations in Porous Systems with Quenched Correlated Disorder**

Y.B. Melnichenko\*, G.D. Wignall and D.R. Cole, *Oak Ridge National Laboratory, Oak Ridge, TN, U.S.A.* and H. Frielinghaus, *Forschungszentrum Jülich GmbH, Jülich, Germany*

**Tuesday, June 24, 2003**

**Photothermal and Photoacoustic Techniques for Property Measurements 4**

**Thermal Characterization and Methods**

Chair: G. Diebold

**Morning - 1: 8:30 - 10:35**

**Room: Eng-200**

- 8:35 AM Experimental Determination of Thermoelastic Constants for Liquids by Photoacoustic Calorimetry**

T. Autrey\*, *Pacific Northwest National Laboratory, Richland, WA, U.S.A.*

- 8:55 AM Thermal Characterization of Intrinsic and Extrinsic InP using a Photoacoustic Technique**

S.D. George\*, S. Dilna, P. Radhakrishnan, V.P.N. Nampoori and C.P.G. Vallabhan, *Cochin University of Science and Technology, Cochin, India*

- 9:15 AM Thermal Diffusivity Measurement of Isotopically Enriched  $^{28}\text{Si}$  Single Crystal by Dynamic Grating Radiometry**

Y. Taguchi\* and Y. Nagasaka, *Keio University, Yokohama, Japan*

- 9:35 AM A Novel Comparative Photothermal Method for Measuring Thermal Diffusivity**

M. Broussely\*, A. Levick and G. Edwards, *National Physical Laboratory, Teddington, Middlesex, United Kingdom*

- 9:55 AM Photoacoustic Spectroscopic Study of the Optical Band Gap of  $\text{Zn}_{1-x}\text{Be}_x\text{Se}$  Semiconductors**

B.K. Sarkar\* and B.K. Chadhuri, *Indian Association for the Cultivation of Science, Kolkata, India*

- 10:15 AM Investigation of Disbalanced Processes in Oligomeric Polyethers**

Y. Bendes\*, *Poltava Military Institute of Communications, Poltava, Ukraine*

**Tuesday, June 24, 2003**

***Properties for Metallurgical Process Design 1***

Chair: R. A. Overfelt

**Morning - 1: 8:30 - 10:15**

**Room: Eng-1B51**

- 8:35 AM      Surface Tension and Viscosity of Commercial Ni- and Ti-Alloys: Results of the ThermoLab Project**

I. Egry, *German Aerospace Center, Köln, Germany*, H.-J. Fecht, *Universität Ulm, Ulm, Germany*, J.P. Garandet\*, *CEA/CEREM, Grenoble, France*, A. Passerone and E. Ricci, *IENI-CNR, Genova, Italy*, S. Schneider, *German Aerospace Center, Köln, Germany*, B. Vinet, *CEA/CEREM, Grenoble, France* and R.K. Wunderlich, *Universität Ulm, Ulm, Germany*

- 8:55 AM      Thermophysical Properties of Undercooled Liquid Cu-Ni Alloys**

G. Lohoefer\*, J. Brillo and I. Egry, *German Aerospace Center, Köln, Germany*

- 9:15 AM      Thermal Expansion and Density Measurement of Metals by a Electromagnetic Levitation Melting Technique**

D. Wang\*, B. Gao and R.A. Overfelt, *Auburn University, Auburn, AL, U.S.A.*

- 9:35 AM      Surface Tension and Viscosity of Quasicrystal-Forming Ti-Zr-Ni Alloys**

R.W. Hyers\*, *University of Massachusetts, Amherst, MA, U.S.A.*, G.W. Lee, K.F. Kelton and A.K. Gangopadhyay, *Washington University, St. Louis, MO, U.S.A.* and J.R. Rogers, *NASA Marshall Space Flight Center, Huntsville, AL, U.S.A.*

**Tuesday, June 24, 2003**

**Properties of Fuels, including Natural Gas Systems 4**  
**Chemical Behavior and Phase Equilibrium**

Chair: M. Jaeschke, R. T Jacobsen and W. M. Haynes

**Morning - 1: 8:30 - 10:15**

**Room: Eng-1B40**

- 8:35 AM      Kinetics of Carbonyl Sulfide Hydrolysis in Propane and Light n-Alkanes**

W.C. Andersen\* and T.J. Bruno, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

- 8:55 AM      High Pressure Phase Equilibria in Model Systems for Hyperbaric Reservoir Fluids**

J.J.M. Machado and Th.W. De Loos\*, *Delft University of Technology, Delft, The Netherlands*

- 9:15 AM      Reformulation of Gasoline: Liquid-Liquid Phase Equilibria and Solubilization Phenomena**

B.E. García-Flores\* and A. Trejo, *Instituto Mexicano del Petróleo, México D. F., Mexico*

- 9:35 AM      Experimental and Calculational Assessment of Hydrocarbon Dew Point Prediction Methods**

D.L. George\* and A.M. Barajas, *Southwest Research Institute, San Antonio, TX, U.S.A.*

- 9:55 AM      Dependence of Thermophysical Properties of n-Alkanes on Carbon Number in the Molecule**

A. Tarzimanov, F. Gabitov, R. Shingarayev and F. Yuzmukchametov\*, *Kazan State Technological University, Kazan, Russia*

**Tuesday, June 24, 2003**

**Theory and Modeling of Thermophysical Properties 4**  
**Transport Properties**

Chair: J. C. Rainwater

**Morning - 1: 8:30 - 10:15**

**Room: Eng-155**

- 8:35 AM Measuring and Modeling the Speed of Sound and the Viscosity of N<sub>2</sub>O and NO.**

J.J. Hurly\*, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

- 8:55 AM Modeling Diffusion and Thermodiffusion Coefficients in Multicomponent Mixtures**

M.G. Bagnoli\*, O.O. Medvedev and A.A. Shapiro, *Technical University of Denmark, Lyngby, Denmark*

- 9:15 AM Calculation of the Effective Thermal Conductivity of Highly Porous Two-Phase Materials**

R. Singh\*, *University of Rajasthan, Jaipur, India*

- 9:35 AM Empirical and Semi-Theoretical Methods for Predicting the Viscosity of Binary n-Alkane Mixtures**

H.G. Yucel\*, *Suleyman Demirel University, Isparta, Turkey*

**Tuesday, June 24, 2003**

**Databases and Data Correlation 5**

**Databases 2**

Chair: G. J. Smith and R. L. Rowley

**Morning - 2: 10:35 - 12:20**

**Room: Eng-151**

- 10:40 AM Global Submission and Validation of Experimental Thermodynamic Data using Guided Data Capture (GDC) Software**

R.D. Chirico\* and V.V. Diky, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*, R.C. Wilhoit, *Texas A&M University, College Station, TX, U.S.A.* and M. Frenkel, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

- 11:00 AM New Process for Delivery of Experimental Thermophysical and Thermochemical Property Data**

M. Frenkel\*, R.D. Chirico, V.V. Diky, Q. Dong, S. Frenkel and P. R. Franchois, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*, D. L. Embry, *ConocoPhillips, Ponca City, OK, U.S.A.*, T.L. Teague, *ePlantData, Inc, Houston, TX, U.S.A.*, K. N. Marsh, *University of Canterbury, Christchurch, New Zealand* and R.C. Wilhoit, *Texas A&M University, College Station, TX, U.S.A.*

- 11:20 AM The Dortmund Databank (DDB) : A Comprehensive Database for Thermophysical Properties**

W. Cordes\* and J. Menke, *DDBST Gmb H, Oldenburg, Germany* and K. Fischer, J. Rarey and J. Gmehling, *Carl von Ossietzky Universität, Oldenburg, Germany*

- 11:40 AM Systematic Approach to Data Quality for Thermodynamic Property Databases**

Q. Dong\*, X.J. Yan, R.D. Chirico, V.V. Diky and M. Frenkel, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

- 12:00 PM Knowledge-Based Thermodynamic Property Data Prediction System**

X.J. Yan\*, Q. Dong and M. Frenkel, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

**Tuesday, June 24, 2003**

**Fluid Property Measurements 3**  
**Caloric and Thermophysical Properties**

Chair: J. D. Olson

**Morning - 2: 10:35 - 12:20**

**Room: Eng-245**

**10:40 AM Calorimetric and PVT Measurements of {n-Hexane + 1-Hexanol} up to 473 K and 20 MPa**

J.Y. Coxam\*, *Université Blaise Pascal, Aubière, France*, H. Ogawa, *Tokyo Denki University, Hiki-gun Saitama, Japan* and J-P.E. Grolier, *Université Blaise Pascal, Aubière, France*

**11:00 AM The Speed of Sound and Derived Thermodynamic Properties of Mixtures of n-Hexane and n-Hexadecane at Pressures up to 100 MPa**

J.P.M. Trusler\* and S.J. Ball, *Imperial College of Science, Technology and Medicine, London, United Kingdom*

**11:20 AM Surface Tension of Melts of Na-K-Cs and Na-K-Rb Ternary Systems of Alkali Metals**

B.B. Alchagirov\*, R. Kh. Arkhestov, T.M. Taova, Kh.B. Khokonov and M.A. Yaganov, *Kabardino-Balkarian State University, Nalchik, Russia* and A.B. Alchagirov, *Tulane University, New Orleans, LA, U.S.A.*

**11:40 AM Experimental Studies of Themocapillary Convection in Monotectic Liquid Alloys**

H. Neumann, *Research Centre Rossendorf Inc., Dresden, Germany*, Yu. Plevachuk\*, *Ivan Franko National University, Lviv, Ukraine* and F. Allenstein, *Technical University Chemnitz, Chemnitz, Germany*

**12:00 PM Thermophysical Properties of Liquid Uranium**

E.E. Shpilrain\*, V.A. Fomin, V.V. Kachalov and G.F. Sokol, *Russian Academy of Sciences, Moscow, Russia*

**Tuesday, June 24, 2003**

**Phase Transitions/Metastable Fluids/Critical Phenomena 5**

**Phase Transitions and Critical Phenomena in Ionic Systems 1**

Chair: J. V. Sengers and J. Thoen

**Morning - 2: 10:35 - 12:20**

**Room: Eng-265**

**10:40 AM      Criticality, Coexistence, and Screening in Electrolytes:  
High-Resolution Simulations (Invited)**

Michael E. Fisher\* and Young Kim, *University of Maryland,  
College Park, MD, U.S.A.*

**11:20 AM      Role of Associated Pairs in the Gas-Liquid Transition of 1:1  
Electrolyte Primitive Models**

J.M. Romero-Enrique\*, *Imperial College of Science, Technology  
and Medicine, London, United Kingdom*, L.F. Rull, *Universidad de  
Sevilla, Sevilla, Spain* and A.Z. Panagiotopoulos, *Princeton  
University, Princeton, NJ, U.S.A.*

**11:40 AM      Phase Behavior of Asymmetric Ionic Fluids**

D. Cheong\* and A.Z. Panagiotopoulos, *Princeton University,  
Princeton, NJ, U.S.A.*

**12:00 PM      Phase Transitions and Tricriticality in the Lattice-  
Restricted Primitive Model Supplemented by Short-Range  
Interactions**

A. Diehl, *Universidade Federal do Ceara, Fortaleza, Brazil* and  
A.Z. Panagiotopoulos\*, *Princeton University, Princeton, NJ,  
U.S.A.*

**Tuesday, June 24, 2003**

***Properties for Metallurgical Process Design 2***

Chair: R. A. Overfelt

**Morning - 2: 10:35 - 12:20**

**Room: Eng-1B51**

- 10:40 AM      Surface Free Energies and Surface Entropies of Pure Liquid Metals**

K. Nakajima\*, *Tohoku University, Sendai, Japan* and S. Seetharaman, *Royal Institute of Technology, Stockholm, Sweden*

- 11:00 AM      The Law of Corresponding States for Surface Properties of Metals**

R.M. Digilov\*, *Technion - Israel Institute of Technology, Haifa, Israel*

- 11:20 AM      Molecular Dynamics Simulation of Thermophysical Properties of a Liquid Cu<sub>3</sub>Au Alloy**

X. Han, M. Chen\* and Z.-Y. Guo, *Tsinghua University, Beijing, P.R. China*

- 11:40 AM      Investigation of the Formation of Iron Nano-Particles by Molecular Dynamics Simulations**

T. Kraska\* and N. Lümmen, *University Köln, Köln, Germany*

- 12:00 PM      Microdiograms of the State of Binary Systems in High Gravitation**

Sh. Mavlakov and B. Makhmudov, *Samarkand State University, Samarkand, Uzbekistan* and S. Rabimov\*, *College of Tourism, Samarkand, Uzbekistan*

**Tuesday, June 24, 2003**

**Properties of Fuels, including Natural Gas Systems 5**  
**Transport Properties and Impurities**

Chair: A. R. H. Goodwin, R. T Jacobsen and W. M. Haynes

**Morning - 2: 10:35 - 12:20**                           **Room: Eng-1B40**

**10:40 AM Viscosity Measurements and Predictions for Natural Gas Mixtures**

M. Jaeschke and P. Schley, *Ruhrgas AG, Dorsten, Germany*  
and C. Küchenmeister and E. Vogel\*, *University of Rostock, Rostock, Germany*

**11:00 AM Measurement of the Thermal Conductivity of Liquid Dimethoxy Methane from 293 to 400 K at Atmospheric Pressure**

J. Pan, Z. Liu and J. Wu\*, *Xi'an Jiaotong University, Shanghai, P.R. China*

**11:20 AM Comparative Study of Viscosity Models on the Ternary System Methylcyclohexane + cis-Decalin + 2,2,4,4,6,8,8-Heptamethylnonane up to 100 MPa**

C.K. Zéberg-Mikkelsen\*, A. Baylaucq and M. Barrouhou,  
*Université de Pau, Pau, France*, S.E. Quiñones-Cisneros,  
*Technical University of Denmark, Lyngby, Denmark* and C. Boned, *Université de Pau, Pau, France*

**11:40 AM The Copper Strip Corrosion Test: Background, Pitfalls and Improvements**

T.J. Bruno\*, W.C. Andersen and A.I. Abdulagatov, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

**12:00 PM Sorption of Fuel Gas Odorants on Clay Surfaces by Gas Chromatography**

K.E. Miller\* and T.J. Bruno, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

**Tuesday, June 24, 2003**

**Theory and Modeling of Thermophysical Properties 5**  
**Theory of Solids**

Chair: J. J. Hurly and J. C. Rainwater

**Morning - 2: 10:35 - 12:20**

**Room: Eng-155**

- 10:40 AM Solid-Liquid-Vapor Phases of Water and Water-Carbon Dioxide Mixtures by Use of a Simple Analytical Equation of State (Invited)**

A. Yokozeki\*, *DuPont Fluoroproducts Laboratory, Wilmington, DE, U.S.A.*

- 11:20 AM A Prototype Engineering Equation of State for Solids**

H. Adidharma\* and M. Radosz, *University of Wyoming, Laramie, WY, U.S.A.*

- 11:40 AM Equations of State for Alkali Halides over a Wide Range of Temperatures and Pressures**

K.V. Khishchenko\* and V.E. Fortov, *Russian Academy of Sciences, Moscow, Russia*

- 12:00 PM Extension of the Thermodynamic Perturbation Theory of Wetheim to Model Solid Phases of Attractive Chain Molecules**

C. Vega, *Universidad Complutense, Madrid, Spain*, F.J. Blas, *Universidad de Huelva, Huelva, Spain* and A. Galindo\*, *Imperial College of Science, Technology and Medicine, London, United Kingdom*

**Tuesday, June 24, 2003**

***Thin Film Properties 1***

Chair: P. M. Norris and A. N. Smith

**Morning - 2: 10:35 - 12:40**

**Room: Eng-200**

- 10:40 AM Impact of Thin Film Thermophysical Properties on Thermal Management of Wide Bandgap Solid-State Transistors (Invited)**

A.N. Smith\*, *U.S. Naval Academy, Annapolis, MD, U.S.A.*

- 11:20 AM The Effects of Processing and Aging on the Thermal Conductivity of Polycrystalline Silicon Films**

S. Graham\*, *Sandia National Laboratories, Livermore, CA, U.S.A.*, D. Campion, *Stanford University, Stanford, CA, U.S.A.*, C.C. Wong and E.S. Piekos, *Sandia National Laboratories, Livermore, CA, U.S.A.* and K.E. Goodson, *Stanford University, Stanford, CA, U.S.A.*

- 11:40 AM Thermal Conductivity of Silicon Aerogel Thin Films**

B. Lawson and T. Zeng\*, *North Carolina State University, Raleigh, NC, U.S.A.*

- 12:00 PM Modeling the Directional Spectral Radiative Properties of Semitransparent Wafers with Thin-Film Coatings**

H.J. Lee\*, B.J. Lee and Z.M. Zhang, *Georgia Institute of Technology, Atlanta, GA, U.S.A.*

- 12:20 PM Thermal Diffusivity of Thin Films by Temperature Wave Analysis**

J. Morikawa\* and T. Hashimoto, *Tokyo Institute of Technology, Tokyo, Japan*

**Tuesday, June 24, 2003**

***Biothermophotonic Diagnostics and Imaging 1***

Chair: A. Mandelis and A. Vitkin

**Afternoon - 1: 1:45 - 3:45**

**Room: Eng-151**

- 1:45 PM      Measurement of Depth Resolved Thermal Properties in Turbid Media Using Differential Phase Optical Coherence Tomography (Invited)**

T.E. Milner\*, S.A. Telenkov and D.P. Dave, *The University of Texas at Austin, Austin, TX, U.S.A.*

- 2:15 PM      Biothermophotonic Studies of Deep Carious Lesions in Teeth using Simultaneous Infrared Photothermal Radiometry and Modulated Laser Luminescence Diagnostics (Invited)**

A. Mandelis\* and J-S. Jeon, *University of Toronto, Toronto, Ontario, Canada* and S. Abrams, *Four Cell Consulting, Toronto, Canada*

- 2:45 PM      A Novel Strategy for Monitoring Laser Thermal Therapy Based on Changes in Optothermal Properties of Heated Tissues (Invited)**

W.M. Whelan\*, *Ryerson University, Toronto, Ontario, Canada* and L.C.L. Chin, G.M. Spirou and I.A. Vitkin, *University of Toronto, Toronto, Ontario, Canada*

- 3:15 PM      Imaging with the Ultrasonic Vibration Potential (Invited)**

G.J. Diebold\*, S. Wang and A.C. Beveridge, *Brown University, Providence, RI, U.S.A.*

**Tuesday, June 24, 2003**

**Fluid Property Measurements 4**

*Transport Properties*

Chair: J. D. Olson

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-245**

- 1:50 PM Measuring the Viscosity of Gases with a Greenspan Viscometer**

J.J. Hurly\* and K.A. Gillis, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

- 2:10 PM Association and Viscosity of Acetic Acid Vapor**

E. Vogel\* and E. Bich, *University of Rostock, Rostock, Germany*

- 2:30 PM Measurement of the Gradient of Viscosity with Composition of Gas Mixtures at Low Temperatures**

P.A. Russell\*, B.A. Buffham and G. Mason, *Loughborough University, Loughborough, Leicestershire, United Kingdom*

- 2:50 PM Comparison between Different Methods for Measuring Viscosity**

M. Mekawy\*, H. Afifi and Kh. El-Nagar, *National Institute for Standards, El-Haram, Egypt*

- 3:10 PM Research on the Thermal Conductivity of Binary Solutions of Normal Alcohols at High Pressures**

Y.M. Naziev\* and M.M. Bashirov, *Azerbaijan Technical University, Baku, Azerbaijan*

**Tuesday, June 24, 2003**

**Phase Transitions/Metastable Fluids/Critical Phenomena 6**

**Phase Transitions and Critical Phenomena in Ionic Systems 2**

Chair: J. M. H. Levelt Sengers and J. Thoen

**Afternoon - 1:45 - 3:30**

**Room: Eng-265**

**1:50 PM Structure and Criticality in Ionic Solutions (Invited)**

W. Schröer\*, *Universität Bremen, Bremen, Germany*

**2:30 PM Ternary Mixtures of 3-Methylpyridine, Water and Sodium Bromide Studied by Adiabatic Scanning Calorimetry**

B. Van Roie\*, G. Pitsi, P. Jamée and J. Thoen, *Katholieke Universiteit, Leuven, Belgium*

**2:50 PM A Mystery of Criticality in Ternary Aqueous Solutions of 3-Methylpyridine and Sodium Bromide: A Multicritical Point or Non-Equilibrium Micro-Phase Separation?**

A.F. Kostko, K. Toto\*, M.A. Anisimov and J.V. Sengers,  
*University of Maryland, College Park, MD, U.S.A.*

**Tuesday, June 24, 2003**

***Properties for Chemical Process Design 1***

Chair: T. Autrey and N. S. Foster-Mills

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-200**

- 1:50 PM Predicting Chemical and Physical Properties and Reactivity for Industrial Applications (Invited)**

A.M. Chaka\*, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

- 2:30 PM Integrating Molecular Modeling and Process Safety Research**

S.R. Saraf, W.J. Rogers and M.S.. Mannan\*, *Texas A&M University, College Station, TX, U.S.A.*

- 2:50 PM New Approach for a Data Engine Suitable for Process Calculations: Uncertainties and Process Design Quality**

M.A. Satyro\*, A. Liu, Y.-K. Li, R.K. Agarwal, O. Santollani and W.Y. Svrcek, *Virtual Materials Group, Inc., Calgary, Alberta, Canada*

- 3:10 PM Correlation of Binary Vapor-Liquid Equilibria: Comparision of Least Squares Methods for Parameter Estimation**

A. Ravi Prasad\* and K. Venkateswara Rao, *Andhra University, Visakhapatnam, India*

**Tuesday, June 24, 2003**

***Properties for Metallurgical Process Design 3***

Chair: R. A. Overfelt

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-1B51**

**1:50 PM      Viscosity of the Molten Fe-Ni Binary Alloy**

Y. Sato\*, K. Sugisawa, D. Aoki and T. Yamamura, *Tohoku University, Sendai, Japan*

**2:10 PM      Thermophysical Properties of Liquid Cobalt**

X. Han, J. Wang, M. Chen\* and Z.-Y. Guo, *Tsinghua University, Beijing, P.R. China*

**2:30 PM      Convective Contamination of Mass Diffusivity  
Measurements with Periodic Temperature Nonuniformities**

R.M. Banish\* and Y.Y. Khine, *University of Alabama, Huntsville, AL, U.S.A.*

**2:50 PM      Thermal Diffusivity Measurements of Refractory Metals as Candidate Reference Materials by the Laser Flash Method**

N. Araki, *Shizuoka University, Hamamatsu, Japan*, T. Baba\*,  
*National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*, H. Ohta, *Ibaraki University, Ibaraki, Japan*, M. Ogawa, *Japan Fine Ceramics Center, Nagoya, Japan*, K. Shinzato, *Bethel Co., Ibaraki, Japan*, Y. Takasaki, *Ulvac-Riko Inc., Yokohama, Japan*, K. Hosono, *Japan Ultra-High Temperature Materials Research Institute, Yamaguchi, Japan*, T. Yamane, *Toray Research Center Inc., Shiga, Japan* and D.W. Tang, *Shizuoka University, Hamamatsu, Japan*

**3:10 PM      Thermophysical Properties for the Development of Laser-Assisted Surface Modification Processes**

O. Baldus, U. Duitsch, S. Schreck and M. Rohde\*,  
*Forschungszentrum Karlsruhe GmbH, Karlsruhe, Germany*

**Tuesday, June 24, 2003**

**Properties of Fuels, including Natural Gas Systems 6**  
**Petroleum Constituents and Reservoirs**

Chair: T. J. Edwards, R. T Jacobsen, and W. M. Haynes

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-1B40**

**1:50 PM Measurement and Corresponding States Modeling of Asphaltene Precipitation**

Y.-F. Hu, *University of Petroleum, Beijing, P.R. China*, S. Li and N. Liu, *Research Institute of Petroleum Exploration and Development, Beijing, P.R. China*, Y.P. Chu, *University of Petroleum, Beijing, P.R. China*, S.J. Park\* and G.A. Mansoori, *University of Illinois at Chicago, Chicago, IL, U.S.A.* and T.-M. Guo, *University of Petroleum, Beijing, P.R. China*

**2:10 PM Small Angle Neutron Scattering Measurements of Asphaltene Nanoparticle Aggregation in Mixtures of Incompatible Crude Oils**

T.G. Mason\*, *ExxonMobil Research and Engineering Co., Annandale, NJ, U.S.A.* and M.Y. Lin, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

**2:30 PM Viscosity Modeling and Prediction of Reservoir Fluids: From Natural Gas to Heavy Oils**

S.E. Quiñones-Cisneros\*, *Technical University of Denmark, Lyngby, Denmark*, C.K. Zéberg-Mikkelsen, A. Baylaucq and C. Boned, *Université de Pau, Pau, France* and E.H. Stenby, *Technical University of Denmark, Lyngby, Denmark*

**2:50 PM Simulation of Hydrate Agglomeration by Discrete Element Methods**

S. Yang\*, G. Mustoe and E.D. Sloan, *Colorado School of Mines, Golden, CO, U.S.A.*

**3:10 PM Application of an Improved Equation of State to Reservoir Fluids for Computation of the Minimum Miscibility Pressure**

Kh. Nasrifar, *University of Tehran, Tehran, Iran* and M. Moshfeghian\*, *University of Qatar, Doha, Qatar*

**Tuesday, June 24, 2003**

**Theory and Modeling of Thermophysical Properties 6**  
**Simulation-Based Studies**

Chair: J. A. White and A. Yokozeki

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-155**

- 1:50 PM Prediction of the Physical Properties of Very Long-Chain Molecules (Invited)**

R.J. Sadus\*, *Swinburne University of Technology, Hawthorn, Victoria, Australia*

- 2:30 PM Virial Coefficients for Hard Spheres Immersed in Hard Rod Solutions**

L. Lue, *UMIST, Manchester, United Kingdom* and J.C. Rainwater\*, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

- 2:50 PM The Kinetics of Mixing and the Fluctuation Theorem in Ideal Mixtures of Two-Component Fluids**

A. Baranyai\*, *Eötvös University, Budapest, Hungary*

- 3:10 PM Calculation of the Gibbs Adsorption Isotherm of Binary Systems: An Alternative Approach using Liquid Bulk and Vapor-Liquid Interface Concentrations**

L.F. Ramírez-Verduzco, A. Romero-Martínez\* and A. Trejo, *Instituto Mexicano del Petróleo, México D. F., Mexico*

- 3:30 PM Diffusive and Convective Mixing in Isothermal Gaseous Multicomponent Mixtures**

V.N. Kosov, *Abay Almaty State University, Almaty, Kazakstan*, V.D. Seleznov, *The Urals State Technical University, Ekaterinburg, Russia*, I.V. Poyarkov\*, *Scientific-Research Institute of Theoretical and Experimental Physics, Almaty, Kazakstan* and O.V. Fedorenko, *Al-Farabi Kazakh National University, Almaty, Kazakstan*

**Tuesday, June 24, 2003**

***Plenary 2***

***Touloukian Awards***

Chair: D. G. Friend

**Afternoon - 2: 3:50 - 6:15**

**Room: Muenzinger Auditorium**

**Third Touloukian Award Lecture**

- 3:55 PM      Bose-Einstein Condensation: Shock Waves and Vortices in  
a Superfluid Gas (Invited)**

Eric A. Cornell\*, *National Institute of Standards and Technology,  
Boulder, CO, U.S.A.*

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- 4:55 PM      Presentation of the 2003 Yeram S. Touloukian Awards**

R. T Jacobsen and A. Mandelis

- 5:25 PM      Touloukian Award Reception**

## Wednesday, June 25, 2003

### ***Inverse Problems in Thermophysics 1***

#### ***Depth Profiling of Thermal Properties***

Chair: R. LiVoti

**Morning - 1: 8:30 - 10:15**

**Room: Eng-151**

- 8:35 AM Microhardness Depth Profiles Retrieved from Frequency Scanned Photothermal Measurements (Invited)**

H.G. Walther\*, *Institute of Optics and Quantum Electronics, Jena, Germany*

- 9:15 AM Physical Mechanisms of Thermal-Diffusivity Depth-Profile Generation in Hardened Steels Reconstructed by Photothermal Radiometry (Invited)**

A. Mandelis\*, L. Nicolaides, N. Baddour and Y. Liu, *University of Toronto, Toronto, Ontario, Canada*

- 9:55 AM Thermal Transport Properties of Layered Composites by Transient Measurement: Identification by a New Numerical Algorithm**

R. Model\*, *Physikalisch-Technische Bundesanstalt, Berlin, Germany*

**Wednesday, June 25, 2003**

***Ionic Liquids and Other Solvents 1***

Chair: K. N. Marsh

**Morning - 1: 8:30 - 10:15**

**Room: Eng-245**

**8:35 AM      Thermodynamics of Ionic Liquids for Separations (Invited)**

S.N.V.K. Aki, J.M. Crosthwaite, J.L. Anthony, E.J. Maginn and  
J.F. Brennecke\*, *University of Notre Dame, South Bend, IN,  
U.S.A.*

**9:15 AM      High-Pressure Phase Behavior of Binary Systems of  
Carbon Dioxide or Trifluoromethane and Certain Ionic  
Liquids**

A. Shariati and C.J. Peters\*, *Delft University of Technology, Delft,  
The Netherlands*

**9:35 AM      1-Octanol/Water Partition Coefficient of Ionic Liquids**

C.H. Chou\* and F.S. Perng, *Ta Hwa Institute of Technology,  
Hsinchu, Taiwan*, D.S.H. Wong, *National Tsing Hua University,  
Hsinchu, Taiwan* and W.C. Su, *Ta Hwa Institute of Technology,  
Hsinchu, Taiwan*

**9:55 AM      Solubility of Thiophene in Carbon Dioxide -- N,N-Dimethylformamide at Temperatures from 313 to 363 K**

O. Elizalde-Solis, L.E. Camacho-Camacho and L.A. Galicia-Luna\*, *Instituto Politecnico Nacional, México D. F., Mexico*

**Wednesday, June 25, 2003**

***Optical and Thermal Radiative Properties of Materials 1***

Chair: Z. Zhang

**Morning - 1: 8:30 - 10:15**

**Room: Eng-1B51**

- 8:35 AM Spectroscopic Approach to Thermal Radiation Phenomena of Surfaces with Application to In-process Surface Diagnosis (Invited)**

Toshiro Makino\*, *Kyoto University, Kyoto, Japan*

- 9:15 AM A Transient Method for Total Emissivity Measurements**

B. Zhang\*, J. Redgrove and J. Clark, *National Physical Laboratory, Teddington, Middlesex, United Kingdom*

- 9:35 AM Rigorous Electromagnetic Modeling of Radiative Interactions with Microstructures using a Multidimensional Finite-Volume Time-Domain Method**

J. Liu\*, *Taitech, Inc., Wright-Patterson AFB, OH, U.S.A.* and S.J. Zhang and Y.S. Chen, *Engineering Sciences, Inc., Huntsville, AL, U.S.A.*

- 9:55 AM Software for Modeling Optical and Thermal Radiative Properties**

D. De Sousa Meneses\*, J.F. Brun, P. Simon and P. Echegut, *CNRS, Orléans, France*

## **Wednesday, June 25, 2003**

### **Phase Transitions/Metastable Fluids/Critical Phenomena 7**

#### **Critical Phenomena: Theory and Simulations 1**

Chair: A. Z. Panagiotopoulos and M. A. Anisimov

**Morning - 1: 8:30 - 10:15**

**Room: Math 100**

- 8:35 AM      Critical Dynamics Near the Superfluid Transition in  $^3\text{He}$ - $^4\text{He}$  Mixtures (Invited)**

R. Folk\*, Linz University, Linz, Austria and G. Moser,  
University of Salzburg, Salzburg, Austria

- 9:15 AM      Simulation and Theory of Supercooled Liquids and Glasses**

M.S. Shell\*, P.G. Debenedetti and A.Z. Panagiotopoulos,  
Princeton University, Princeton, NJ, U.S.A.

- 9:35 AM      Molecular Modeling of Fluids Near to and Far from the Critical Region: Application of SAFT-VRX**

C. McCabe\*, S.B. Kiselev and J.F. Ely, Colorado School of Mines,  
Golden, CO, U.S.A.

**Wednesday, June 25, 2003**

***Properties for Chemical Process Design 2***

Chair: N. S. Foster-Mills and T. Autrey

**Morning - 1: 8:30 - 10:15**

**Room: Eng-200**

- 8:35 AM Transport Property Needs Related to Chemical Separation Processes (Invited)**

R.D. Noble\*, *University of Colorado, Boulder, CO, U.S.A.*

- 9:15 AM Correlation of Liquid Viscosity at the Normal Boiling Point**

G.J. Smith\*, *Eastman Chemical Company, Kingsport, TN, U.S.A.*  
and W.V. Wilding, J.L. Oscarson and R.L. Rowley, *Brigham Young University, Provo, UT, U.S.A.*

- 9:35 AM Application of Phase Equilibria for the Precipitation from Aqueous Solutions**

M. Pascal\*, J. Green and A. Kordikowski, *Bradford Particle Design Ltd., Bradford, United Kingdom*

- 9:55 AM A Prediction Method for Thermal Conductivity of Organic Compounds in the Liquid Phase up to the Critical Point**

G. Latini\*, G. Passerini and A. D'Amore, *Università di Ancona, Ancona, Italy*

## **Wednesday, June 25, 2003**

### ***Properties of Working Fluids, including Refrigerants 1***

#### ***Transport Properties 1***

Chair: M. O. McLinden

**Morning - 1: 8:30 - 10:15**

**Room: Eng-1B40**

- 8:35 AM Thermal Conductivity of Carbon Multiwalled Nanotube (C-MWNT) Suspensions in Water (Invited)**

M.J. Assael\* and I. Metaxa, Aristotle University, Thessaloniki, Greece, C.F. Chen, MER Corporation, Tucson, AZ, U.S.A. and W.A. Wakeham, University of Southampton, Southampton, Highfield, United Kingdom

- 9:15 AM Thermophysical Properties of 1,1,1,3,3-Pentafluorobutane**

A.P. Fröba, K. Krzeminski and A. Leipertz\*, Universität Erlangen-Nürnberg, Erlangen, Germany

- 9:35 AM p-P-T Relationships in a HCFC-22, HFC-152a and HCFC-124 Zeotropic Mixture**

Yu.A. Laptev and O.B. Tsvetkov\*, St. Petersburg State Academy of Refrigerating and Food Techniques, St. Petersburg, Russia

**Wednesday, June 25, 2003**

***Wetting and Interfaces 1***  
***Substrate Structure and Geometry***

Chair: C. J. Boulter

**Morning - 1: 8:30 - 10:15**

**Room: Eng-265**

- 8:35 AM   **Fluids near Wedges, Apexes and Cones: Fluctuation Effects and Covariance Relations (Invited)**  
A.O. Parry\*, M.J. Greenall, J.M. Romero-Enrique, *Imperial College of Science, Technology and Medicine, London, United Kingdom*
- 9:15 AM   **Adsorption on a Corrugated Substrate**  
K. Rejmer\*, *Warsaw University, Warsaw, Poland*
- 9:35 AM   **Filling in Triangular 2d Ising Model**  
D.B. Abraham, V.I. Mustonen\* and A.J. Wood, *Oxford University, Oxford, United Kingdom*

**Wednesday, June 25, 2003**

***Inverse Problems in Thermophysics 2***

***Depth Profiling of Optical and Other Physical Properties***

Chair: R. Li Voti

**Morning - 2: 10:35 - 12:20**

**Room: Eng-151**

**10:40 AM Depth Profiling of Physical Properties by a Neural Network Approach (Invited)**

C. Glorieux\*, *Katholieke Universiteit, Leuven, Belgium*

**11:20 AM Opto-Thermal Inverse Depth Profiling using a Genetic Algorithm**

Y. Cui\*, P. Xiao and R.E. Imhof, *South Bank University, London, United Kingdom*

**11:40 AM Photothermal Depth Profiling of Optical Material Properties by a Neural Network Approach**

C. Glorieux\*, *Katholieke Universiteit, Leuven, Belgium* and J.S. Antoniou and Ph. Grossel, *Laboratoire de Thermophysique, Reims, France*

**12:00 PM Photothermal Depth Profiling by Genetic Algorithms and Thermal Wave Backscattering**

R. Li Voti\*, C. Sibilia and M. Bertolotti, *Università di Roma "La Sapienza", Roma, Italy*

**Wednesday, June 25, 2003**

***Ionic Liquids and Other Solvents 2***

Chair: J. F. Brennecke

**Morning - 2: 10:35 - 12:20**

**Room: Eng-245**

- 10:40 AM Liquid-Liquid Equilibria for Room Temperature Ionic Liquids 1-Alkyl-3-Methylimidazolium Hexafluorophosphate (C4 to C8) + Ethanol + Water and Partition Coefficients of Ethanol between Water and Ionic Liquid**

K.N. Marsh\*, E. Tran and J.A. Boxall, *University of Canterbury, Christchurch, New Zealand*

- 11:00 AM Molecular Modeling of Imidazolium-Based Ionic Liquids**

E.J. Maginn\*, *University of Notre Dame, South Bend, IN, U.S.A.* and J. Shah and T.I. Morrow, *University of Notre Dame, Notre Dame, IN, U.S.A.*

- 11:20 AM Phase Diagram of the Aqueous Two-Phase Systems in Protein Recovery**

S.P. Tan\*, H. Adidharma and M. Radosz, *University of Wyoming, Laramie, WY, U.S.A.*

- 11:40 AM Solvation Properties of Fluorinated Molecules**

J. Deschamps, M.F. Costa Gomes\* and A.A.H. Padua, *Université Blaise Pascal, Aubière, France*

- 12:00 PM Modeling for Aqueous Alkali-Earth Metal Solutions Based on the Synergistic Action of Association and Hydration under Supercritical Conditions**

X. Lu\*, H. Ding, Yu. Zhu and X. Li, *Nanjing University, Nanjing, P.R. China*

**Wednesday, June 25, 2003**

***Optical and Thermal Radiative Properties of Materials 2***

Chair: J. Liu

**Morning - 2: 10:35 - 12:20**

**Room: Eng-1B51**

- 10:40 AM     Instrumentation for Measuring the Bidirectional Scattering Distribution Function of Rough Surfaces (Invited)**

Z.M. Zhang\* and Q.Z. Zhu, *Georgia Institute of Technology, Atlanta, GA, U.S.A.*

- 11:20 AM     Enhancement of the Spectral Emissivity of an Infrared Heater with a Black Metal Compound**

P. Echegut\*, B. Rousseau and D. De Sousa Meneses, *CNRS, Orléans, France*

- 11:40 AM     Simultaneous Measurement Method for Normal Spectral Emissivity and Optical Constants at High Temperatures**

D. Yajima\*, *Keio University, Yokohama, Japan*, A. Ohnishi, *Institute of Space and Astronautical Science, Sagamihara, Japan* and Y. Nagasaka, *Keio University, Yokohama, Japan*

## **Wednesday, June 25, 2003**

### **Phase Transitions/Metastable Fluids/Critical Phenomena 8**

#### **Critical Phenomena: Theory and Simulations 2**

Chair: S. B. Kiselev and M. A. Anisimov

**Morning - 2: 10:35 - 12:20**

**Room: Math 100**

- 10:40 AM Effect of the Range of Attractive Interactions on the Metastable Phase Transition and Percolation of Colloidal Dispersions**

J. Wu\*, *University of California, Riverside, CA, U.S.A.* and D. Fu and Y. Li, *Tsinghua University, Beijing, P.R. China*

- 11:00 AM Binary Mixtures of Ising Fluids**

W. Fenz and R. Folk\*, *Linz University, Linz, Austria*

- 11:20 AM Landau Expansion for the Critical Point of a Polydisperse System**

C. Rascon\*, *Universidad Carlos III de Madrid, Leganes, Spain* and M.E. Cates, *University of Edinburgh, Edinburgh, United Kingdom*

- 11:40 AM Chemical Reaction Rates at the Critical Point of Solution**

Y.W. Kim and J.K. Baird\*, *University of Alabama, Huntsville, AL, U.S.A.*

**Wednesday, June 25, 2003**

***Properties for Chemical Process Design 3***

Chair: T. Autrey and N. S. Foster-Mills

**Morning - 2: 10:35 - 12:20**

**Room: Eng-200**

- 10:40 AM Molecular Simulation Methods for Prediction of Phase Equilibrium Properties (Invited)**

A.Z. Panagiotopoulos\* and P.J. Lenart, *Princeton University, Princeton, NJ, U.S.A.*

- 11:20 AM A Simplified Perturbed Chain SAFT Equation of State: An Accurate and Efficient Model for Vapor-Liquid and Liquid-Liquid Equilibrium in Multicomponent, Polymer and Associating Systems**

N. von Solms\*, T.H. Lindvig, I. Kouskoumvekaki, M.L. Michelsen and G.M. Kontogeorgis, *Technical University of Denmark, Lyngby, Denmark*

- 11:40 AM Prediction of Vapor-Liquid Equilibria for Polar Mixtures at High Pressures using Infinite-Dilution Activity Coefficients**

Rakesh P. Singh\*, *Indian Institute of Technology Kanpur, Kanpur, India*

- 12:00 PM Evaluation of ASOG Group Parameters for VLE of Systems Containing 1, 4 Dioxane Mixtures**

S.R. Bhimavarapu, R.P. Andra and V.R. Kamireddi\*, *Andhra University, Visakhapatnam, India*

## **Wednesday, June 25, 2003**

### ***Properties of Working Fluids, including Refrigerants 2***

#### ***Transport Properties 2***

Chair: M. O. McLinden

**Morning - 2: 10:35 - 12:20**

**Room: Eng-1B40**

- 10:40 AM Density and Viscosity Modeling of Refrigerants Based on the f-Theory and a Non-Cubic EOS**

S.E. Quiñones-Cisneros\*, *Technical University of Denmark, Lyngby, Denmark* and M.J.P. Comuñas and J. Fernández, *Universidad de Santiago de Compostela, Santiago de Compostela, Spain*

- 11:00 AM Viscosity Measurements and Model Comparisons for the Refrigerant Blends R410A and R507A**

A. Laesecke\*, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

- 11:20 AM Supercooling Water in Cylindrical Capsules**

J.J. Milon Guzman and S.L. Braga\*, *DEM.PUC, Rio de Janeiro, Brazil*

- 11:40 AM Lower Flammability Limit of Difluoromethane and Percolation Theory**

I. Kul\* and D.L. Gnann, *Kennesaw State University, Kennesaw, GA, U.S.A.* and A.L. Beyerlein and D.D. DesMartea, *Clemson University, Clemson, SC, U.S.A.*

**Wednesday, June 25, 2003**

**Software Demonstrations 1**

Chair: M. L. Huber and R. L. Rowley

**Morning - 2: 10:35 - 12:20**

**Room: UMC 235**

- 10:40 AM A Network Database System for Thermophysical Property Data**

T. Baba\*, M. Okumiya, M. Sasaki, K. Ishikawa and A. Ono,  
*National Institute of Advanced Industrial Science and Technology,  
Tsukuba, Japan*

- 10:40 AM Automated System for Calculating Thermophysical Properties of Fluids and Thermal Processes of Cryogenic Plants**

A.A. Vasserman, *Odessa National Maritime University, Odessa, Ukraine* and S.V. Bodyul and E.S. Bodyul\*, *Odessa State Academy of Refrigeration, Odessa, Ukraine*

- 10:40 AM CAPEC Property Estimation Package**

J. Marrero and R. Gani\*, *Technical University of Denmark, Lyngby, Denmark*

- 10:40 AM Database of Properties for Aqueous Organic Compounds**

N.V. Plyasunova\*, A.V. Plyasunov and E.L. Shock, *Arizona State University, Tempe, AZ, U.S.A.*

- 10:40 AM Database on Thermodynamic and Rheological Properties of Substances under Extreme Conditions**

P.R. Levashov\*, K.V. Khishchenko and I.V. Lomonosov, *Russian Academy of Sciences, Moscow, Russia*

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## **Wednesday, June 25, 2003**

### **Software Demonstrations 1**

#### **(Continued)**

Chair: M. L. Huber and R. L. Rowley

**Morning - 2: 10:35 - 12:20**

**Room: UMC 235**

**10:40 AM Databases and Software System for Thermodynamic Modeling in a Wide Range of Pressure and Temperature**

V.E. Fortov, V.P. Efremov, V.S. Iorish\*, V.S. Yungman, G.V. Belov, K.V. Khishchenko and P.R. Levashev, *Russian Academy of Sciences, Moscow, Russia*, S.A. Gubin and S.B. Victorov, *Moscow Engineering Physics Institute, Moscow, Russia* and I.V. Lomonosov, *Russian Academy of Sciences, Moscow, Russia*

**10:40 AM DIPPR Evaluated Process Design Database**

R.J. Rowley\*, W.V. Wilding, J.L. Oscarsen and R.L. Rowley, *Brigham Young University, Provo, UT, U.S.A.*

**10:40 AM ENVIRON: DIPPR Project 911's Vision of Industry Standard Software for Physical Property Display and Selection**

T.N. Rogers and D.A. Zei, *Michigan Technological University, Houghton, MI, U.S.A.*, A.K. Dewan, *Equilon Enterprises LLC, Houston, TX, U.S.A.* and T.J. Willman\*, *Epcon International, Houston, TX, U.S.A.*

**10:40 AM From Raw Physical Data to Reliable Thermodynamic Model Parameters**

U. Westhaus\* and R. Sass, *DECHEMA e.V., Frankfurt, Germany*

**10:40 AM NIST/TRC Databases and Software for Chemistry and Engineering**

M. Frenkel\*, R.D. Chirico, Q. Dong, X.J. Yan and X. Hong, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*, R.C. Wilhoit, *Texas A&M University, College Station, TX, U.S.A.* and V.V. Diky, R. A. Stevenson and G. R. Hardin, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

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**Wednesday, June 25, 2003**

**Software Demonstrations 1**

**(Continued)**

Chair: M. L. Huber and R. L. Rowley

**Morning - 2: 10:35 - 12:20**

**Room: UMC 235**

**10:40 AM Physical Properties of Liquids and Gases (Database)**

Yu.K. Vinogradov\* and V.I. Lopatin, *Moscow Aviation Institute, Moscow, Russia*

**10:40 AM Property Libraries for Calculating Heat Cycles and Turbines**

H.-J. Kretzschmar\*, I. Stoecker, K. Knobloch and I. Jaehne, *University of Applied Sciences of Zittau and Görlitz, Zittau, Germany* and A. Dittmann and J. Klinger, *Technical University of Dresden, Dresden, Germany*

**10:40 AM State Behavior Database for Pure Liquids and Data Correlation**

I. Cibulka\*, *Prague Institute of Chemical Technology, Prague, Czech Republic* and T. Takagi, *Kyoto Institute of Technology, Kyoto, Japan*

**10:40 AM The Dortmund Databank (DDB): A Comprehensive Database for Thermophysical Properties**

W. Cordes\* and J. Menke, *DDBST Gmb H, Oldenburg, Germany* and K. Fischer, J. Rarey and J. Gmehling, *Carl von Ossietzky Universität, Oldenburg, Germany*

**10:40 AM The NIST Chemistry WebBook**

P.J. Linstrom\*, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

**10:40 AM The REFPROP Database for the Thermophysical Properties of Fluids**

E.W. Lemmon\*, M.O. McLinden and M.L. Huber, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

-continued on next page-

**Wednesday, June 25, 2003**

***Software Demonstrations 1***

**(Continued)**

Chair: M. L. Huber and R. L. Rowley

**Morning - 2: 10:35 - 12:20**

**Room: UMC 235**

**10:40 AM Using the visPROP for Excel Interface for Retrieval of Fluid Properties from Database and Property Correlation Formats**

J.M. Persichetti\*, *Horizon Technologies, Littleton, CO, U.S.A.*  
and V. Arp, *Cryodata, Inc., Boulder, CO, U.S.A.*

**Wednesday, June 25, 2003**

***Wetting and Interfaces 2***  
***General Theory***

Chair: C. J. Boulter

**Morning - 2: 10:35 - 12:20**

**Room: Eng-265**

**10:40 AM Particle Transport by Nanoflows**

A. Dominguez\* and S. Dietrich, *Max-Planck-Institut für Metallforschung, Stuttgart, Germany*

**11:00 AM Correlation Functions as a Probe for Pinning Transitions**

A.J. Wood\* and D.B. Abraham, *Oxford University, Oxford, United Kingdom*

**11:20 AM Exact Results for a Filling Transition**

D.B. Abraham\*, *Oxford University, Oxford, United Kingdom* and  
A.M. Maciolek, *Polish Academy of Sciences, Warsaw, Poland*

**11:40 AM On the Interfacial Behavior About the Shield Region**

A. Mejia\* and H. Segura, *Universidad de Concepción, Concepción, Chile*

**12:00 PM Curvature Dependence of Surface Tension of a Liquid-Vapor Interface**

V.G. Baidakov, G.Sh. Boltachev\* and G.G. Chernykh, *Institute of Thermal Physics, Ekaterinburg, Russia*

**Wednesday, June 25, 2003**

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Chair: L. A. Watts

**Afternoon - 1: 1:45 - 3:30**

**Room: UMC Ballroom**

**Databases and Data Correlation**

**Automated System for Calculating Thermophysical Properties of Fluids and Thermal Processes of Cryogenic Plants**

A.A. Vasserman, *Odessa National Maritime University, Odessa, Ukraine* and S.V. Bodyul and E.S. Bodyul\*, *Odessa State Academy of Refrigeration, Odessa, Ukraine*

**Equation of State of Real Gases**

A.B. Kaplun and A.B. Meshalkin\*, *Russian Academy of Sciences, Novosibirsk, Russia*

**MixtureDB, a Thermophysical Property Database**

J. Cobas-Rodríguez\* and E. Pardillo-Fontdevila, *Centro de Química Farmacéutica, Habana, Cuba*

**Fluid Property Measurements**

**Compressed Liquid Densities of Propane/ N,N-Dimethylformamide and Thiophene /Propane/ N,N-Dimethylformamide (DMF) Mixtures via a Vibrating Tube Densimeter from 313 to 363 K and 21 MPa**

V. Serrano-Cocoletzi, A. Zúñiga-Moreno\* and L.A. Galicia-Luna, *Instituto Politecnico Nacional, México D. F., Mexico*

**Cosolvent Effect on the Solubility of Heavy Hydrocarbons in Supercritical CO<sub>2</sub>**

R. Eustaquio-Rincon\* and A. Trejo, *Instituto Mexicano del Petróleo, México D. F., Mexico*

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**Afternoon - 1:45 - 3:30**

**Room: UMC Ballroom**

**Fluid Property Measurements**

**Density of Melts of Alkali Metals and their Na-K-Cs and Na-K-Rb Ternary Systems**

B.B. Alchagirov, R. Kh. Arkhestov, T.M. Taova and Kh.B. Khokonov, *Kabardino-Balkarian State University, Nalchik, Russia* and A.B. Alchagirov\*, *Tulane University, New Orleans, LA, U.S.A.*

**Electron Work Function of Melts of Na-K-Cs and Na-K-Rb Ternary Systems**

A.B. Alchagirov\*, *Tulane University, New Orleans, LA, U.S.A.* and B.B. Alchagirov, R. Kh. Arkhestov, T.M. Taova and Kh.B. Khokonov, *Kabardino-Balkarian State University, Nalchik, Russia*

**Gas Viscosity Ratios Measured with a Capillary Flow Meter**

R.F. Berg\*, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

**High Pressure Speed of Sound Measurements for Methyl Nonafluorobutyl Ether and Ethyl Nonafluorobutyl Ether**

M.M. Piñeiro\*, *Universidade de Vigo, Vigo, Spain*, F. Plantier and D. Bessières, *Université de Pau, Pau, France*, J.L. Legido, *Universidade de Vigo, Vigo, Spain* and J.L. Daridon, *Université de Pau, Pau, France*

**Lifetime of Standard Egyptian Oils for Viscosity**

M. Mekawy\* and N.I. El-Sayed, *National Institute for Standards, El-Haram, Egypt*

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**Afternoon - 1: 1:45 - 3:30**

**Room: UMC Ballroom**

**Fluid Property Measurements**

**Measurement of Thermal Expansivity and Density as a Function of Pressure and Study of Isothermal Compressibility and Heat Capacity**

S. Verdier\* and S.I. Andersen, *Technical University of Denmark, Lyngby, Denmark*

**Photopyroelectric Thermal Effusivity Measurements of Transparent Liquid Mixtures**

J.A. Balderas-López\*, *UPIBI-IPN Avenida Acueducto S/N, México D. F., Mexico*

**Research on the Density of Methanol + Toluol Binary Mixtures at High Pressures**

Y.M. Naziev and V.G. Gasanov\*, *Azerbaijan Technical University, Baku, Azerbaijan* and J.Y. Naziev, *Azerbaijan State Oil Academy, Baku, Azerbaijan*

**Rheological Parameters of Some Liquids at Various External Conditions**

F. Ganiev\*, R. Akhmedjonov and L. Gazieva, *Samarkand State University, Samarkand, Uzbekistan*

**Solubility of Hydrogen in Heavy n-Alkane Binary Mixtures**

J.C. Pàmies, *Universitat Rovira I Virgili, Tarragona, Spain*, L.J. Florusse, *Delft University of Technology, Julianalaan, The Netherlands*, L.F. Vega, *Universitat Rovira I Virgili, Tarragona, Spain*, C.J. Peters\*, *Delft University of Technology, Delft, The Netherlands* and H.H. Meijer, *Shell Global Solutions International B.V., Amsterdam, The Netherlands*

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**Afternoon - 1:45 - 3:30**

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**Fluid Property Measurements**

**Specific Heat Capacity and Density of the System of Transformer Oil and Water: Dependence on Temperature and Pressure**

M.M. Safarov\* and U.U. Kosimov, *Tajik Technical University named after M.S. Osimi, Dushanbe, Tajikistan*

**Study on the Volumetric Properties and Viscosities of MEGDME and DEGDME up to 100 MPa**

M.J.P. Comuñas, *Universidad de Santiago de Compostela, Santiago de Compostela, Spain*, A. Baylaucq\*, F. Plantier and C. Boned, *Université de Pau, Pau, France* and J. Fernández, *Universidad de Santiago de Compostela, Santiago de Compostela, Spain*

**The Equation of State for Skeleton Hydrocarbons**

I.I. Adamenko, K.O. Moroz\* and I.V. Beleyevych, *Kiev National Taras Shevchenko University, Kiev, Ukraine*

**The Line of Freezing and the Equation of State for Selected Liquid Alkanes**

I.I. Adamenko and K.O. Moroz\*, *Kiev National Taras Shevchenko University, Kiev, Ukraine*

**Thermal Conductivity of Systems (Methylethyleneglycol + Water) in the Interval 293 to 573 K and 0.101 to 49.1 MPa**

M.M. Safarov\*, M.A. Zaripova and M.T. Turgunboev, *Tajik Technical University named after M.S. Osimi, Dushanbe, Tajikistan*

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**Afternoon - 1:45 - 3:30**

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**Fluid Property Measurements**

**Thermodynamic Properties of Perfluorocarbons**

A.M.A. Dias\*, J.A.P. Coutinho and I.M. Marrucho, *Universidade de Aveiro, Aveiro, Portugal* and M. Pineiro, *University of Vigo, Vigo, Spain*

**Thermophysical Properties of Alkylene Carbonates**

Y. Chernyak\*, D.C. Ferguson, J.M. Clements and H.P. Klein, *Huntsman Corporation, Austin, TX, U.S.A.*

**Vapor Pressure of Acetonitrile Determined by Comparative Ebulliometry**

M.B. Ewing and J.C. Sanchez Ochoa\*, *University College London, London, United Kingdom*

**Volumetric Properties of Tetraethylene Glycol Dimethyl Ether + Heptane up to 25 MPa**

I.L. Acevedo, *Facultad de Ciencias Exactas y Tecnología, S. M. de Tucumán, Argentina*, L. Lugo and M.J.P. Comuñas, *Universidad de Santiago de Compostela, Santiago de Compostela, Spain*, E.L. Arancibia, *Facultad de Ciencias Exactas y Tecnología, S. M. de Tucumán, Argentina* and J. Fernández\*, *Universidad de Santiago de Compostela, Santiago de Compostela, Spain*

**Ionic Liquids and Other Solvents**

**Experimental and Simulated Solubilities of Gases in Dialkylimidazolium Ionic Liquids**

J.N. Canongia Lopes, *Instituto Superior Técnico, Lisboa, Portugal* and M.F. Costa Gomes\*, J. Deschamps, P.V.T. Husson, J. Jacquemin, V. Majer and A.A.H. Padua, *Université Blaise Pascal, Aubière, France*

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**Ionic Liquids and Other Solvents**

**Ionic Liquids as New Working Fluids for Use in Absorption Heat Pumps or Chillers: Their Thermodynamic Properties**

K.S. Kim\*, B.K. Shin and H. Lee, *Korea Advanced Institute of Science and Technology, Daejeon, Korea* and F. Ziegler, *Technische Universität Berlin, Berlin, Germany*

**On the Width of the Polarized Line in Raman Scattering of Benzene in Solution**

I.P. Kleyner\* and Sh. B. Amonov, *Samarkand State University, Samarkand, Uzbekistan*

**Solubility of Thiophene in Propane - N,N-Dimethylformamide at Temperatures from 313 to 363 K**

L.E. Camacho-Camacho, O. Elizalde-Solis and L.A. Galicia-Luna\*, *Instituto Politecnico Nacional, México D. F., Mexico*

**Solvent Influence on the Absorption Spectra of H-Bonded Complexes**

G. Murodov\*, *Samarkand State University, Samarkand, Uzbekistan* and K.G. Tokhadze, *St. Petersburg State University, St. Petersburg, Russia*

**Molecular Simulation**

**Development of a Simulation Force Field for Equilibrium and Transport Property Calculations**

H. Zhang\* and J.F. Ely, *Colorado School of Mines, Golden, CO, U.S.A.*

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**Molecular Simulation**

**Equilibrium Molecular Dynamics Calculation of the Transport Properties of Molten Uranium Dioxide and Zirconium**

M. Katahira\* and Y. Nagasaka, *Keio University, Yokohama, Japan*

**Molecular Aggregation in Liquid Dimethylformamide: Raman Spectra and Quantum-Chemical Calculations**

F.H. Tukhvatullin, H. Hushvaktov, A. Jumabaev, U.N. Tashkenbaev, S.A. Osmanov and F.R. Akhmedzhanov\*, *Samarkand State University, Samarkand, Uzbekistan*

**Molecular Dynamics Simulations of the Liquid-Vapor Interfacial Region: Cutoff Distance Strategies for Distributed Computing**

A.P. Wemhoff\*, V.P. Carey and M. Yue, *University of California, Berkeley, CA, U.S.A.*

**Monte Carlo Simulation of Crystalline and Amorphous Polymeric Solid Nitrogen**

L.N. Yakub\*, *Odessa State Academy of Refrigeration, Odessa, Ukraine*

**Monte Carlo Simulations on Model Fluid Electrolyte Solutions**

C. Li\*, R. Tian, G. Lu and Z. Wang, *Beijing University of Chemical Technology, Beijing, P.R. China*

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**Molecular Simulation**

**Simulation of Liquid-Liquid Interfaces**

M.A Balderas\*, U.A.M.-Iztapalapa, México D. F., Mexico, A. Trejo, Instituto Mexicano del Petróleo, México D. F., Mexico and J. Alejandro, U.A.M.-Iztapalapa, México D. F., Mexico

**Structural Precursor for the Freezing Transition and Changes of Entropy in Colloids**

D. Osorio-González\*, M. Mayorga, J. Orozco and L. Romero-Salazar, UAEM, Toluca, Mexico

**The Industrial Fluid Properties Simulation Challenge: Highlights of the First Event and a Preview of the Second**

J.D. Olson\*, The Dow Chemical Company, South Charleston, WV, U.S.A.

**Vapor-Liquid Equilibria of Alternative Refrigerants and their Binary Mixtures by Molecular Dynamics Simulations**

R. Budinsky and V. Vacek\*, Czech Technical University, Prague, Czech Republic and M. Lisal, Academy of Sciences, Prague, Czech Republic

**Non-Destructive Evaluation with Thermophysics**

**Development of a Thermophysical Handy Tester for Non-destructive Evaluation of Engineering Solid Materials**

I. Takahashi\* and Y. Ikeno, Yamagata University, Yamagata, Japan, T. Kumasaka, Yonezawa Electric Wire Co., Yamagata, Japan and M. Higano, Akita Prefectural University, Honjo, Akita, Japan

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**Non-Destructive Evaluation with Thermophysics**

**Influence of Charge Doping on the Thermal Diffusivity of the Double Perovskite  $\text{Sr}_2\text{FeMoO}_6$  Studied by the Mirage Effect**

Chao-xian Zhao, Ai-hua Luo, Xiao-jun Liu\*, Shu-yi Zhang and Li-ping Cheng, *Nanjing University, Nanjing, P.R. China*

**Novel Instrumentation and Measurement Techniques**

**A New End-Effect-Free Sensor for the Transient Hot Strip Technique**

V. Meier, U. Hammerschmidt\* and R. Stosch, *Physikalisch-Technische Bundesanstalt, Braunschweig, Germany* and R. Model, *Physikalisch-Technische Bundesanstalt, Berlin, Germany*

**A New Method for Measuring Methanol Partitioning between Aqueous and Hydrocarbon Phases**

D.F.M. Bruinsma\* and E.D. Sloan, *Colorado School of Mines, Golden, CO, U.S.A.*

**An Automated Vibrating-Tube Densimeter for Measurements of Small Density Differences in Dilute Aqueous Solutions**

L. Hnedkovsky and I. Cibulka\*, *Prague Institute of Chemical Technology, Prague, Czech Republic*

**Automatic Ultrasonic Thermometry**

Xiao-bing Mi and Shu-yi Zhang\*, *Nanjing University, Nanjing, P.R. China*, Jun-jie Zhang, *Institute of Acoustics & University of Science and Technology of China, Hefei, P.R. China* and Yue-tao Yang, *Nanjing University, Nanjing, P.R. China*

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**Novel Instrumentation and Measurement Techniques**

**Development of a Laser Induced Capillary Wave Method  
for Viscosity Measurement using a Pulsed Carbon Dioxide  
Laser**

T. Oba\*, Y. Nagasaka and Y. Kido, *Keio University, Yokohama, Japan*

**Nonlinear Effects in Laser Flash Thermal Diffusivity  
Measurements**

J. Gembarovik\* and J. Gembarovic, Jr., *Thermophysical  
Properties Research Laboratory, Inc., West Lafayette, IN, U.S.A.*

**Precision Pyrometers for Thermophysical Experiments**

V.N. Senchenko\*, V.S. Dozhdkov and D.I. Kapustin, *Russian  
Academy of Sciences, Moscow, Russia*

**Simultaneous Measurements of Thermal Conductivity and  
Heat Capacity of Polymer Plates using Temperature  
Profiles at a Quasi Steady State**

J. Fujino\* and T. Honda, *Fukuoka University, Jonan-ku, Fukuoka,  
Japan*

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**Afternoon - 1: 1:45 - 3:30**

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**Optical and Thermal Radiative Properties of Materials**

**A Structure Electroluminescence on the Base of Diamond-like Films: a-C:H**

A.A. Babaev\*, I.K. Kamilov, A.M. Askhabov, S.B. Sultanov and S.B. Abdulvagabov, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

**Formation and Behavior of Phototrop Centers in Garnet Crystals**

M.Kh. Ashurov and A.F. Rakov\*, "Phonon" *Scientific Industrial Association, Tashkent, Uzbekistan* and A.M. Kurbanov, *Institute of Nuclear Physics Uzbek Academy of Science, Tashkent, Uzbekistan*

**Formation of Heterogeneous Aggregations between Rodamine and Acredine Dye Molecules and their Spectral Display**

N.N. Nizamov\*, E.N. Kurtaliev, A.U. Kholov and M.O. Yunusova, *Samarkand State University, Samarkand, Uzbekistan*

**Influence of a Pulsed Discharge on Vibrational Relaxation in Aqueous Sodium Nitrate**

A.R. Aliev\*, M.M. Gafurov and I.R. Akhmedov, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

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**Optical and Thermal Radiative Properties of Materials**

**Investigation of Spectroscopic Properties  $\text{Y}_3\text{Al}_5\text{O}_{12}$  Crystals Activated by Rare-Earth Ions**

A.A. Yusupov, N.N. Nizamov, Sh.N. Nizamov\* and M.K. Salakhitdinova, *Samarkand State University, Samarkand, Uzbekistan*

**Manifestation of Structure Ordering of Ethylene Glycols in their Raman Spectra**

R. Akhmedjonov, E. Khodjeiva\* and S. Sattarov, *Samarkand State University, Samarkand, Uzbekistan*

**Photo and Cathode Luminescence of  $\text{CuInSe}_2$**

T.M. Gadjev\*, A.A. Babaev, I.K. Kamilov and R.M. Gadjeva, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia* and S.A. Nurmagomedov, *Daghestan State University, Makhachkala, Russia*

**Rotational Motion of Molecules and Relaxation Time in the Isotropic Phase of Liquid Crystals**

L. Sabirov and D.I. Semenov\*, *Samarkand State University, Samarkand, Uzbekistan*

**Vibrational Spectra of Liquids and Solutions Under High Pressure**

R. Akhmedjonov\*, F. Ganiev, A. Davidov and M. Kulieva, *Samarkand State University, Samarkand, Uzbekistan*

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**Phase Transitions/Metastable Fluids/Critical Phenomena**

**A Thermodynamic Equation of State for the Critical Region  
of Ethylene**

A. Abbaci\* and A. Berrezeg, *Université Badji Mokhtar, Sidi-Ammar, Annaba, Algeria*

**Critical Phenomena in an Eight-Arm Polystyrene in  
Methylcyclohexane**

D.T. Jacobs\*, N.L. Venkataraman, C.I. Braganza, R.D. Hartschuh and C.J. Locke, *The College of Wooster, Wooster, OH, U.S.A.*

**Effect of Molecular Geometry on the Liquid-Liquid  
Equilibrium of Binary Non-Aqueous Liquid Mixtures.  
Alkane + Alcohol, Alcoxyalcohol, Diol or Polyether Systems**

L.M. Trejo\*, B. Salas and F. Cervantes, *Universidad Nacional Autónoma de México, México D. F., Mexico*

**Fundamental Equations of State for Hydrocarbons in the  
Critical Region**

B.A. Grigoriev\* and A.A. Gerasimov, *Russian Academy of Sciences, Moscow, Russia*

**Investigation of Near-Critical States of Molybdenum by the  
Method of Isentropic Expansion**

A.N. Emelyanov\*, A.A Pyalling and V.Ya. Ternovoi, *Russian Academy of Sciences, Chernogolovka, Russia*

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**Phase Transitions/Metastable Fluids/Critical Phenomena**

**Measurements of the  $^3\text{He}$  Coexistence Curve near the Liquid-Gas Critical Point Using a Quasistatic Thermogram Technique**

I. Hahn\*, F. Zhong, M. Weilert and M. Barmatz, *California Institute of Technology, Pasadena, CA, U.S.A.*

**Phase Equilibria and Critical Phenomena in Ternary Aqueous Ionic Systems**

K.I. Gutkowski\*, H.L. Bianchi and M.L. Japas, *Comisión Nacional de Energía Atómica, Buenos Aires, Argentina*

**Phase Transitions and Metastable States in the Initial Stage of Wire Explosion**

S.I. Tkachenko\*, K.V. Khishchenko, V.S. Vorob'ev, P.R. Levashov, I.V. Lomonosov and V.E. Fortov, *Russian Academy of Sciences, Moscow, Russia*

**Phases and Metastable Phases in the Ternary System  $\text{Ni}_2+(\text{AOT})_2/\text{Isooctane/Water}$**

C. Garza\*, *National University of Mexico, México D. F., Mexico*, M. Carbalaj-Tinoco, *CINVESTAV, México D. F., Mexico* and R. Costillo, *National University of Mexico, México D. F., Mexico*

**Predicted Thermodynamic and Physical Boundary of Superheated and Stretched Water by EOS and the Fluctuation Theory of Relaxation.**

E.D. Rogdakis\*, N.A. Bormpilas and I.K. Koniakos, *National Technical University of Athens, Athens, Greece*

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**Phase Transitions/Metastable Fluids/Critical Phenomena**

**Study of the Acoustic Properties of Critical Solutions**

R. Turniyazov\*, Samarkand State University, Samarkand,  
Uzbekistan

**Study of the Behavior of Sound Velocity and Absorption in  
Stratified Solutions and Solutions with a Singular Point**

L. Sabirov\*, Ya. Turakulov and H. Haydarov, Samarkand State  
University, Samarkand, Uzbekistan

**Values of Critical Indexes for Inhomogeneous Equilibrium  
Liquids under Gravity**

O.D. Alekhin\*, Kiev National Taras Shevchenko University, Kiev,  
Ukraine

**Isomorphism of Critical Phenomena in Liquid Mixtures  
and Cell-to-Cell Communication in Synapses**

A.V. Chalyi\*, National Medical University, Kiev, Ukraine, K.A.  
Chalyy, Kiev National Taras Shevchenko University, Kiev,  
Ukraine, L.M. Chernenko, National Academy of Sciences of  
Ukraine, Kiev, Ukraine and A.N. Vasil'ev, National Taras  
Shevchenko University, Kiev, Ukraine

**Phase Diagram and Thermophysical Properties of  
Superheated Fluids**

S.E. Puchinskis, P.V. Skripov, A.A. Starostin, D.V. Volosnikov  
and G.Sh. Boltachev\*, Institute of Thermal Physics, Ekaterinburg,  
Russia

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**Phenomena at Ultrashort Time/Length Scales**

**Determination of the Orientational Correlation Relaxation Time for Monomer and Aggregated Formations for Pyridine in Solution by Raman Spectra**

F.H. Tukhvatullin, A. Jumabaev, U.N. Tashkenbaev, A. Absanov and F.R. Akhmedzhanov\*, *Samarkand State University, Samarkand, Uzbekistan*

**Fluid Dynamics in the Multi-Walled Carbon Nanotube**

D.A. Gavryushenko, V.M. Sysoev, L.Yu. Matzui and Yu.I. Prylutskyy\*, *Kiev National Taras Shevchenko University, Kiev, Ukraine* and Y. Gogotsi, *Drexel University, Philadelphia, PA, U.S.A.*

**Size Effects on the Thermophysical Properties of Thermochemical Materials**

Y. Chen\*, *Institute of Physics, Taipei, Nankang, Taiwan, C. Wang, Institute of Physics, Taipei, Taiwan, Y. Wang, Fu Jen University, Taipei, Taiwan* and C. Chang and L.-J. Chen, *Tamkang University, Taipei, Taiwan*

**Photothermal and Photoacoustic Techniques for Property Measurements**

**Dependence of Radiative and Resource Characteristics of Heterolasers on Structure of GaInAsP/In P Base**

A. Sh. Faizullaev\*, *Samarkand State University, Samarkand, Uzbekistan*

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**Photothermal and Photoacoustic Techniques for Property Measurements**

**High-Speed Infrared Radiation Thermometry for Micro-Scale Thermophysical Property Measurements**

J. Ishii\* and Y. Shimizu, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*, K. Shinzato, *Bethel Co., Ibaraki, Japan* and T. Baba, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

**Photoacoustic Analysis of Pigments from Archeological Ceramics**

J.L Jimenez Perez\*, *CICATA-Unidad Legaria, México D. F., Mexico* and A. Cruz Orea and J.G. Mendoza -Alvarez, *CINVESTAV-IPN, México D. F., Mexico*

**Photoacoustic Analysis of the Evolution from Sols to Aged Gels: Comparison of Different Initial Titania Sols**

M.C. Marchi\*, *Universidad de Buenos Aires Facultad de Ciencias Exactas Naturales, Buenos Aires, Argentina*, R. Castañeda-Guzmán, *Centro de Ciencias Aplicadas y Desarrollo Tecnológico, México D. F., Mexico*, S.A. Bilmes, *INQUIMAE-DQIAQF, Buenos Aires, Argentina*, M. Villagrán- Muniz, *Centro de Ciencias Aplicadas y Desarrollo Tecnológico, México D. F., Mexico* and P. Pacheco, *Universidad Nacional Autónoma de México, México D. F., Mexico*

**Photoacoustic Studies of Cd<sub>1-x</sub>Be<sub>x</sub>Se Mixed Crystals**

J. Zakrzewski\*, M. Pawlak, F. Firszt, S. Legowski, A. Marasek and H. Meczynska, *Nicolaus Copernicus University, Torun, Poland*

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**Photothermal and Photoacoustic Techniques for Property Measurements**

**Photoacoustic Thermal Characterization and Microstructure of API5L-X52 Steel**

G. Peña-Rodríguez, CICATA-IPN, México D. F., Mexico, O. Flores-Macias and C. Angeles-Chavez, I.M.P, México D. F., Mexico and A. Calderón\* and R.A. Muñoz-Hernández, CICATA-IPN, México D. F., Mexico

**Thermal Characterization of Calcium Salts of Some Saturated Carboxylic Acids using an Open Photoacoustic Cell**

S. Stolik, Centro de Aplicaciones Tecnológicas y Desarrollo Nuclear, Habana, Cuba, A. Valor, Universidad de la Habana, Habana, Cuba, S.A. Tomás\*, Centro de Investigación y de Estudios Avanzados del IPN, México D. F., Mexico, E. Reguera, Universidad de La Habana, Habana, Cuba and Sanchez-Sinencio, Centro de Investigación y de Estudios Avanzados-IPN, México D. F., México

**Uncertainty of Thermal Diffusivity Measurements by Laser Flash Method**

B. Hay\*, J-R. Filtz, J. Hameury and L. Rongione, BNM-LNE, Paris, France

**Properties for Chemical Process Design**

**Diagrams of Basic Thermodynamic Functions of Multicomponent Systems**

S.V. Karavan, O.A. Pinchuk\* and D.V. Karavan, Vodokanal-Engineering, St. Petersburg, Russia

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**Properties for Chemical Process Design**

**Enthalpies of Formation of Dibutyl Phthalate and Methyl 4-Hydroxybenzoate**

Yu. Maksimuk, *Belarusian State University, Minsk, Belarus*, K. Ruzicka, *Prague Institute of Chemical Technology, Prague, Czech Republic* and V.V. Diky\*, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

**On the Development of a Group-Interaction-Contribution-Based UNIFAC Model**

J. Cobas-Rodríguez\* and E. Pardillo-Fontdevila, *Centro de Química Farmacéutica, Habana, Cuba*

**Properties for Environmental Applications**

**<sup>13</sup>C NMR Analysis of Mixed Carbon Dioxide and Nitrogen Hydrate for Studying the Guest Molecular Dynamics in Hydrate Cages**

J.S. Park\*, Y.T. Seo, J.W. Lee and H. Lee, *Korea Advanced Institute of Science and Technology, Daejeon, Korea*

**Aqueous Solubility of Hydrocarbons as a Function of Molecular Structure**

P. Dohanyosova, *Prague Institute of Chemical Technology, Prague, Czech Republic*, S. Sarraute, H. Delepine, M.F. Costa Gomes\* and V. Majer, *Université Blaise Pascal, Aubière, France* and V. Dohnal, *Prague Institute of Chemical Technology, Prague, Czech Republic*

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**Properties for Metallurgical Process Design**

**Surface Tension of Nearly Eutectic Alloys of the Pb-Bi System**

B.B. Alchagirov\*, T.M. Taova, A.M. Chochaeva and Kh.B. Khokonov, *Kabardino-Balkarian State University, Nalchik, Russia* and A.G. Mozgovoy, *Russian Academy of Sciences, Moscow, Russia*

**Thermal Diffusivity Measurements using Reduced Algorithms**

R.M. Banish\* and S. Brantschen, *University of Alabama, Huntsville, AL, U.S.A.*, T. Pourpoint, *Purdue University, West Lafayette, IN, U.S.A.*, F. Wessling, *University of Alabama, Huntsville, AL, U.S.A.* and R.S. Sekerka, *Carnegie Mellon University, Pittsburgh, PA, U.S.A.*

**Thermal Diffusivity of Ni - Si Alloys in the Vicinity of the Melting Point**

L.D. Zagrebin, O.E. Karakulov, S.V. Buzilov, S.M. Perevozchikov and K.E. Bernotas\*, *Izhevsk State Technical University, Izhevsk, Russia*

**Thermal Properties of Complex Aluminum Alloy Porous Powder Compacts**

K.Y. Sastry\*, L. Froyen, J. Vleugels, E.H. Bentefour and C. Glorieux, *Katholieke Universiteit, Leuven, Belgium*

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**Properties of Aqueous Systems**

**Ammonia Role in the Formation of Radiation Fields in VVER**

V.G. Kritsky\*, Yu.A. Rodionov, M.V. Yudin, I.G. Berezina, A.A. Slobodov and V.A. Petrov, *All Russian Design and Scientific Research Institute of Complex Power Technology (VNIPRIET), Saint-Petersburg, Russia*

**Correlation of Infinite Dilution Diffusion Coefficients with Molar Volume**

K.R. Harris\*, *University of New South Wales, Canberra, Australia*

**Experimental Investigation of the Isochoric Heat Capacity of the Binary n-Hexane + Water System in the Vicinity of the Azeotrope Line**

G.V. Stepanov, E.I. Milihina, A.R. Rasulov\* and G.M. Ataev, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

**Liquid-Liquid Equilibria in the System Toluene + Water + Methyldiethanolamine**

F.-Y. Jou and A.E. Mather\*, *University of Alberta, Edmonton, Alberta, Canada*

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**Properties of Aqueous Systems**

**P- $\rho$ -T and P<sub>s</sub>- $\rho$ <sub>s</sub>-T<sub>s</sub> Behavior of Aqueous Lithium Chloride Solutions**

J.T. Safarov and A.N. Shahverdiyev\*, *Azerbaijan Technical University, Baku, Azerbaijan* and S.H. Huseynova, *Azerbaijan Technology University, Ganja, Azerbaijan*

**PVT<sub>x</sub> and Isochoric Heat Capacity Measurements for Aqueous Methanol Solutions**

M.M. Aliev\*, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*, J.W. Magee, *National Institute of Standards and Technology, Boulder, CO, U.S.A.* and I.M. Abdulagatov, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

**PVT<sub>x</sub> Measurements for H<sub>2</sub>O + Methanol Mixtures in the Supercritical Region**

A.R. Bazaev and I.M. Abdulagatov\*, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*, J.W. Magee, *National Institute of Standards and Technology, Boulder, CO, U.S.A.* and E.A. Bazaev and A.E. Ramazanova, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

**Salting-Out Effect on the Liquid-Liquid Equilibrium of Two Ternary Systems**

G.R. Vakili-Nezhad\* and M. Mohsen-Nia, *University of Kashan, Kashan, Iran*, V. Taghikhani, *Sharif University of Technology, Tehran, Iran* and M. Aghahosseini, *University of Kashan, Kashan, Iran*

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**Properties of Aqueous Systems**

**Second Cross Virial Coefficients for Interactions Involving Water: Compilation and Correlation of Data**

A.V. Plyasunov\* and E.L. Shock, *Arizona State University, Tempe, AZ, U.S.A.*

**Study of Concentration Structural Fluctuations in Aqueous Solutions of Trichloro-Acetic Acid and Dimethylformamide by Rayleigh Light Scattering**

S.A. Osmanov, F.H. Tukhvatullin, A. Jumabaev, H. Hushvaktov and F.R. Akhmedzhanov\*, *Samarkand State University, Samarkand, Uzbekistan*

**The Phase Equilibria Curves of Hydrocarbon + Water Binary Mixtures**

V.A. Mirskaya\*, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

**Thermal Conductivity of Aqueous SrBr<sub>2</sub> Solutions at High Temperatures and High Pressures**

U.B. Magomedov and I.M. Abdulagatov\*, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

**Three-Phase Equilibrium in the n-Pentane + Water System**

S.M. Rasulov\* and I.A. Isaev, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

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**Properties of Fuels, including Natural Gas Systems**

**A Model for the Calculation of the Thermal Conductivity for Binary Fluid Mixtures**

Z. Shan\* and S.G. Penoncello, *University of Idaho, Moscow, ID, U.S.A.*

**Are Laboratory Hydrates Analogs of in-situ Hydrates?**

K.C. Hester\*, M. Eaton and E.D. Sloan, *Colorado School of Mines, Golden, CO, U.S.A.*

**Effect of P/n/a Composition on Solubility of Gases, Liquids and Solids in Petroleum Fractions**

Y.A. Roomi and M.R. Riazi\*, *Kuwait University, Safat, Kuwait*

**Generalized Relation Between Surface Tension and Viscosity: A Study on Pure and Mixed n-Alkanes**

A.J. Queimada\* and I.M. Marrucho, *Universidade de Aveiro, Aveiro, Portugal*, E.H. Stenby, *Technical University of Denmark, Lyngby, Denmark* and J.A.P. Coutinho, *Universidade de Aveiro, Aveiro, Portugal*

**Hydrate Cage Distortions and Effects on Spectroscopy**

K.C. Hester\*, S.F. Dec and E.D. Sloan, *Colorado School of Mines, Golden, CO, U.S.A.*

**Improved Hydrate Equilibrium Measurements in Ternary Gas and Black Oil Systems**

J.R. Ivanic\* and E.D. Sloan, *Colorado School of Mines, Golden, CO, U.S.A.*

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**Properties of Fuels, including Natural Gas Systems**

**Liquid-Vapor Equilibrium of Methane in Hexane-Decane at Three Different Temperatures up to 20 MPa**

V. Uribe-Vargas\* and A. Trejo, *Instituto Mexicano del Petróleo, México D. F., Mexico*

**Phase Equilibria in the System Nitrogen-Ethane and Their Prediction using Cubic Equations of State with Different Types of Mixing Rules**

G. Raabe\* and J. Koehler, *TU Braunschweig, Braunschweig, Germany*

**Research into Thermodynamic Effects in Fluid-Saturated Porous Media**

R.A. Valiullin, A.Sh. Ramazanov and R.F. Sharafutdinov\*, *Bashkir State University, Bashkortostan, Russia*

**Thermodynamic Properties of n-Alkanes in the Liquid State**

T.S. Khasanshin\*, A.P. Shchamialiou and O.G. Poddubskij, *Mogilev State University of Foodstuffs, Mogilev, Belarus*

**Properties of Polymers and Mesoscopic Systems**

**Concentration Dependence of Viscometric Properties of Short Chain Polymer Solutions**

T. Kairn\*, P.J. Daivis, M.L. Matin and I.K. Snook, *Royal Melbourne Institute of Technology, Melbourne, Victoria, Australia*

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**Properties of Polymers and Mesoscopic Systems**

**Identification of High Temperature Pyrolysed Carbon  
Phenolic Composite Conductivity**

V. Ducamp\* and J.P. Lasserre, *CEA CESTA, Le Barp, France*

**Study of the Stability and Oxygen Solubility of  
Perfluorocarbon Emulsions**

M. Freire and A.M.A. Dias\*, *Universidade de Aveiro, Aveiro, Portugal*, M.A.Z. Coelho, *EQ / UFRJ, Rio de Janeiro, Brazil* and J.A.P. Coutinho and I.M. Marrucho, *Universidade de Aveiro, Aveiro, Portugal*

**Properties of Solids**

**Application of the Bragg Light Scattering Method for  
Studying Acoustic Activity in Crystals**

F.R. Akhmedzhanov\*, *Samarkand State University, Samarkand, Uzbekistan*

**Linear Thermal Expansion of Candidate Reference  
Materials: Glass-Like Carbon**

H. Watanabe\*, N. Yamada and M. Okaji, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

**Measurements of Thermal Diffusivity of Solid Semi-transparent Materials by the Flash Method**

T. Kabayabaya, X. Zhang\* and F. Yu, *University of Science and Technology, Beijing, P.R. China*

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**Properties of Solids**

**Methods of Investigation of Heat and Mass Transfer  
Parameters in Porous Media**

A.A. Lipayev\*, *Almetyevsk Oil Institute, Tatarstan, Russia*

**Radiation Stimulated Defect Formation and Mass Diffusion  
in Yttria-Stabilized Zirconia**

M.Kh. Ashurov, "Phonon" Scientific Industrial Association,  
Tashkent, Uzbekistan, E.M. Gasanov, Institute of Nuclear  
Physics Uzbek Academy of Science, Tashkent, Uzbekistan, A.F.  
Rakov\*, "Phonon" Scientific Industrial Association, Tashkent,  
Uzbekistan, A.M. Kurbanov, Institute of Nuclear Physics Uzbek  
Academy of Science, Tashkent, Uzbekistan and M.Z. Amonov,  
Uzbek Academy of Science, Tashkent, Uzbekistan

**Research on the Morphological Features of Monocrystals  
Grown in Conditions of High Gravitation**

Sh. Mavlono, Samarkand State University, Samarkand,  
Uzbekistan, S. Rabimov\*, College of Tourism, Samarkand,  
Uzbekistan and R. Hasanov, Samarkand State University,  
Samarkand, Uzbekistan

**Some Interactions of S with Cd in Si**

E.U. Arzikulov\*, R.J. Toshpulotov, S.N. Srajev and T.U.  
Toshboev, Samarkand State University, Samarkand, Uzbekistan

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**Properties of Solids**

**Study of the Thermal Diffusivity and Microstructure in  
API5L-X52 Carbon Steel**

G. Peña-Rodríguez\*, CICATA-IPN, México D. F., Mexico, O. Flores-Macias and C. Angeles-Chavez, I.M.P, México D. F., Mexico and A. Calderón and R.A. Muñoz-Hernández, CICATA-IPN, México D. F., Mexico

**The Influence of High Gravitation on the Kinetic Factors of  
Substances**

Sh. Mavlakov, Samarkand State University, Samarkand, Uzbekistan, S. Rabimov\*, College of Tourism, Samarkand, Uzbekistan and A. Artikov, Samarkand State University, Samarkand, Uzbekistan

**The Use of a Thermal Networks Method for the  
Measurement of Thermal Diffusivity of Porous Materials  
Used in Buildings**

A. El Bouardi\*, Abdelmalek Essaadi University, Tetuan, Morocco

**Thermal Conductivity of Maleated Polyethylene/Layered  
Silicate Nanocomposites**

S.-H. Lee\*, Korea Research Institute of Standards and Science, Taejeon, Korea, J.E. Kim and H.H. Song, University of Hannam, Taejeon, Korea, S.W. Kim, University of Ulsan, Ulsan, Korea and S.W. Kim, Korea Research Institute of Standards and Science, Taejeon, Korea

**Thermal Diffusivity of Rocks at High Temperature by the  
Laser Flash Technique**

U.V. Mardolcar\*, Instituto Superior Técnico, Lisboa, Portugal

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**Properties of Solids**

**Thermal Insulation Properties of Expanded Polystyrene as Construction and Insulating Materials**

K.T. Yucel\*, C. Basyigit and C. Ozel, *Suleyman Demirel University, Isparta, Turkey*

**Thermophysical Properties of Ceramic Materials Based on SiC-AlN Solid Compounds**

G.K. Safaraliev\*, B.A. Bilalov, Sh.Sh. Shabanov, G.D. Kardashova and H.A. Abdeljavad, *Dagestan State University, Makhachkala, Russia*

**Properties of Working Fluids, including Refrigerants**

**A Combined Equation of State for HFC-134a**

V. Rykov and E. Ustjuzhanin\*, *Moscow Power Engineering Institute, Moscow, Russia*, J.W. Magee, *National Institute of Standards and Technology, Boulder, CO, U.S.A.* and B. Grigoriev, I. Rykova and B. Reutov, *Moscow Power Engineering Institute, Moscow, Russia*

**A Fundamental Boiling Point Equation (BPE) of Pure Fluids. Applicability to Wagner VPE of Water and Comparison with Kretzschmar-Oguchi VPE**

E.D. Rogdakis\*, *National Technical University of Athens, Athens, Greece*

**A Scaling Model for the Refractive Index of HFC 134a and HFC 143a on the Coexistence Curve**

E. Ustjuzhanin\*, *Moscow Power Engineering Institute, Moscow, Russia*, J. Yata, *Kyoto Institute of Technology, Kyoto, Japan* and B. Reutov, B. Grigoriev and K. Jakovenko, *Moscow Power Engineering Institute, Moscow, Russia*

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**Properties of Working Fluids, including Refrigerants**

**A Study of Vapor-Liquid Equilibria and Refrigeration Performance of Refrigerant Mixtures**

J.S. Lim\*, J.Y. Park, J.D. Kim and B.G. Lee, *Korea Institute of Science and Technology (KIST), Seoul, Korea*

**Generalized Estimation Equations for Thermophysics Properties of Saturated Fluids and the Saturated Properties Table of HFC-227ea**

Z.S. Chen\*, P. Hu and W.L. Cheng, *University of Science and Technology of China, Anhui, P.R. China*

**Measurement of Vapor-Liquid Equilibrium for the Binary Mixture of Propane (R-290) + Iso-Butane (R-600a)**

B.G. Lee\*, J.S. Lim, Q.N. Ho and J.Y. Park, *Korea Institute of Science and Technology (KIST), Seoul, Korea*

**Phase Equilibria of 1,1,1-Trifluoroethane (HFC-143a) + Propane (HC-290)**

J.Y. Park\*, W.J. Yang, B.G. Lee and J.S. Lim, *Korea Institute of Science and Technology (KIST), Seoul, Korea*

**Relative Permittivity of 1,1,1,2,3,3,3-Heptafluoropropane (HFC-227ea), 1,1,1,2,3,3-Hexafluoropropane (HFC-236ea) and 1,1,1,3,3-Pentafluorobutane (HFC-365mfc) in the Liquid Phase**

A.P.C. Ribeiro, *Universidade Nova de Lisboa, Caparica, Portugal*, C.A. Nieto de Castro, *Universidade de Lisboa, Lisboa, Portugal* and U.V. Mardolcar\*, *Instituto Superior Técnico, Lisboa, Portugal*

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**Properties of Working Fluids, including Refrigerants**

**Short Fundamental Equations of State for Industrial Fluids**

E.W. Lemmon\*, *National Institute of Standards and Technology, Boulder, CO, U.S.A.* and R. Span, *Universität Paderborn, Paderborn, Germany*

**Thermal Conductivity and Thermal Diffusivity of the Refrigerant Mixtures R507, R404A, R410A, and R407C**

J. Avsec\* and M. Marcic, *University of Maribor, Maribor, Slovenia* and A. Leipertz and A.P. Fröba, *Universität Erlangen-Nürnberg, Erlangen, Germany*

**Thermophysical Properties of Binary Mixtures of R125 + R143a in Comparison with a Simple Prediction Method**

A.P. Fröba, H. Kremer and A. Leipertz\*, *Universität Erlangen-Nürnberg, Erlangen, Germany*

**Velocity of Sound and Viscosity for Pure HFC Refrigerants and Their Mixtures in the High Pressure Gas Region**

J. Avsec\*, *University of Maribor, Maribor, Slovenia*

**Viscosity Measurement and Correlation of Squalane + CO<sub>2</sub> Mixture**

D. Tomida\*, A. Kumagai and C. Yokoyama, *Tohoku University, Sendai, Japan*

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**Subsecond Thermophysics**

**Measurements of Specific Heat Capacity and Hemispherical Total Emissivity using a Feedback-Controlled Pulse-Heating Technique: An Examination on Measurement Uncertainty Due to Conductive Heat Loss**

T. Matsumoto, H. Watanabe\* and A. Ono, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

**Theory and Modeling of Thermophysical Properties**

**A Multi-Scale Model for the Effective Thermal Conductivity Tensor of a Stratified Composite Material**

J.M. Goyhenecche\* and A. Cosculluela, *Laboratoire des Composites Thermostructuraux (LCTS), Pessac, France*

**A Novel Concept of Symmetry in a Model of Fluctuational Thermodynamics**

V.B. Rogankov, V.A. Mazur and S.V. Artemenko\*, *Odessa State Academy of Refrigeration, Odessa, Ukraine*

**A Simple Equation of State for Associating Fluids**

G.-H. Gao\*, Q.-L. He and Y.-X. Yu, *Tsinghua University, Beijing, P.R. China*

**Applied Equation of the Critical State**

M.M. Asadov and E.E. Ramazanova\*, *Azerbaijan State Oil Academy, Baku, Azerbaijan*

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**Theory and Modeling of Thermophysical Properties**

**Cosolvent Effect on Solubility of Disperse Dyes in Supercritical Fluids**

H.K. Bae\* and J.H. Jeon, *Yeungnam University, Kyongsan, Korea* and H. Lee, *Korea Advanced Institute of Science and Technology, Daejeon, Korea*

**Density Functional Study of Hydrogen Adsorption at Low Temperatures**

C. Gu, G.-H. Gao\* and Y.-X. Yu, *Tsinghua University, Beijing, P.R. China*

**Features of the Thermoelectrical Power in CuInSe<sub>2</sub> Monocrystals.**

T.M. Gadiev\*, P.P. Khohlachev, A.A. Babaev, I.K. Kamilov and R.M. Gadieva, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

**Free Energy for an Anisotropic and Inhomogeneous Fluid of Spherocylinders**

J. Mulia\* and J. Orozco, *UAEM, Toluca, Mexico*

**High Temperature Transport Properties of Nitrogen**

L. Biolsi\*, *MEAD Technologies, Rolla, MO, U.S.A.* and P.M. Holland, *Thorleaf Research Inc., Santa Barbara, CA, U.S.A.*

**Interaction Potential for Inert Gas Mixtures**

N.V. Fomin\*, *State Technical University, St. Petersburg, Russia*

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**Theory and Modeling of Thermophysical Properties**

**Non-Fourier Heat Conduction Modeling in a Finite Medium**

J. Gembarovic, Jr. and J. Gembarovik\*, *Thermophysical Properties Research Laboratory, Inc., West Lafayette, IN, U.S.A.*

**On the Constancy of the Self-Diffusion Coefficient at the Solid-Liquid Phase Transition**

M.N. Magomedov\*, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

**On the Thermodynamic Consistency of the Temperature Dependence of the Debye Temperature**

M.N. Magomedov\*, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

**Predicting Phase Behavior of Alkanes and Perfluoroalkanes in Supercritical Carbon Dioxide using the SAFT-VR Approach**

A. Galindo, *Imperial College of Science, Technology and Medicine, London, United Kingdom*, F.J. Blas, *Universidad de Huelva, Huelva, Spain* and C.M. Colina\* and K.E. Gubbins, *North Carolina State University, Raleigh, NC, U.S.A.*

**Surface Free Energy as a Function of Size and Shape of Nanocrystals**

M.N. Magomedov\*, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

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**Theory and Modeling of Thermophysical Properties**

**The Breakdown of the Clapeyron-Clausius Equation due to  
the Irreversibility of Phase Transitions of the First Kind**

M.N. Magomedov\*, *Dagestan Scientific Center of Russian  
Academy of Sciences, Makhachkala, Russia*

**Thermodynamic Properties of Highly Nonspherical Fluids**

H. Xiang\*, *Chinese Academy of Science, Beijing, P.R. China*

**Use of *Ab Initio* Interaction Energies for NRTL to Predict  
Phase Equilibria in the System Nitrogen - Ethane**

G. Raabe\* and J. Koehler, *TU Braunschweig, Braunschweig,  
Germany*

**Van der Waals Model of a Fluctuation Gas Close to the  
Critical Point**

O.D. Alekhin\*, L.A. Bulavin, Yu.L. Ostapchuk and E.G. Rudnikov,  
*Kiev National Taras Shevchenko University, Kiev, Ukraine*

**Thermophysical Properties of Biomaterials**

**A Modified Extended UNIQUAC Model for Proteins**

J.A.P. Coutinho\*, *Universidade de Aveiro, Aveiro, Portugal* and  
F.L. Pessoa, *Universidade Federal do Rio de Janeiro, Rio de  
Janeiro, Brazil*

**Application of Scanning Electron-Acoustic Microscopy to  
Biomedical Materials**

Chun-ming Gao, Shu-yi Zhang\*, Peng-cheng Miao, Zhong-ning  
Zhang, Yi Hong, Xiu-ji Shui and Ting Yu, *Nanjing University,  
Nanjing, P.R. China*

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**Thermophysical Properties of Biomaterials**

**Detection of an Aromatic Compound at the Roots of  
*Cyperus Hermaphroditus* by Photoacoustic Techniques**

A. Cruz-Orea\* and S.A. Tomás-Velazquez, *Centro de Investigación y de Estudios Avanzados del IPN, México D. F., Mexico* and A. Guerrero-Zúñiga and A. Rodríguez-Dorantes, *Lab. de Fisiología Vegetal, México D. F., Mexico*

**Determination of the Thermal Diffusivity of Edible Films**

S.A. Tomás\* and A. Cruz-Orea, *Centro de Investigación y de Estudios Avanzados del IPN, México D. F., Mexico*, S. Stolik, *Centro de Aplicaciones Tecnológicas y Desarrollo Nuclear, Habana, Cuba* and R. Pedroza-Islas, D.L. Villagómez and J. Gómez, *Universidad Iberoamericana, México D. F., Mexico*

**Photoacoustic Thermal and Thermomechanical  
Characterization Study of Restorative Materials on Teeth**

J.L. Pichardo\*, *Universidad de Guanajuato, León, Guanajuato, Mexico*, J.J. Alvarado-Gil, *CINVESTAV, Mérida, Yucatan, Mexico*, G. Gutierrez-Juarez, *Universidad de Guanajuato, León, Guanajuato, Mexico* and M. Vargas-Luna and M.R. Huerta-Franco, *Universidad de Guanajuato, León, Mexico*

**Photothermal Radiometry Study of Buried Structures in  
Biomineralized Materials**

M. Zambrano, *CINVESTAV, Mérida, Yucatan, Mexico*, M. Vargas-Luna\*, *Universidad de Guanajuato, León, Mexico*, J.P. Valcárcel, *Surcolombian University, Neiva, Colombia* and J.J. Alvarado-Gil, *CINVESTAV, Mérida, Yucatan, Mexico*

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**Thermophysical Properties of Biomaterials**

**Spectroscopic and Thermal Characterization of Encapsulated Agar in SiO<sub>2</sub> AND TiO<sub>2</sub> Sol-Gel**

T. Lopez, M. Picquart and G. Aguirre, *U.A.M.-Iztapalapa, México D. F., Mexico* and Y. Freile, D.H. Aguilar\* and P. Quintana, CINVESTAV, Mérida, Yucatan, Mexico

**Study of Human Oxyhemoglobin by a Nanosecond Time-Resolved Photoacoustic Calorimetry Method**

Li Sun, Hao Chen, Shu-yi Zhang\* and Hui-lan Chen, *Nanjing University, Nanjing, P.R. China*

**Thermal Characterization of Agar Using Photopyroelectric Techniques**

R. Dominguez and Y. Freile, *CINVESTAV, Mérida, Yucatan, Mexico*, J.P. Valcárcel, *Surcolombian University, Neiva, Colombia*, M. Yañez-Limón, *CINVESTAV, Querétaro, Mexico* and J.J. Alvarado-Gil\*, *CINVESTAV, Mérida, Yucatan, Mexico*

**Thermal Characterization of Nitrified and Denitrified Microbiological Mud Encapsulated in Silica Gels**

T. Lopez, M. Picquart and J. Gomez, *U.A.M.-Iztapalapa, México D. F., Mexico* and D.H. Aguilar\*, P. Quintana and J.J. Alvarado-Gil, *CINVESTAV, Mérida, Yucatan, Mexico*

**Thermodynamics of Skeletal Muscle Contraction**

M.S. Miroshnichenko, Yu.I. Prylutskyy, A.M. Shut\*, D.M. Nozdrenko, I.A. Zaloilo and A.D. Suprun, *Kiev National Taras Shevchenko University, Kiev, Ukraine*

**Wednesday, June 25, 2003**

**Posters**

Chair: L. A. Watts

**Afternoon - 1:45 - 3:30**

**Room: UMC Ballroom**

**Thin Film Properties**

**Thermal Conductivity Measurement of Fused-Silica Films Deposited on a Silicon Wafer using a Thermo-Reflectance Technique**

R. Kato\*, *Ulvac-Riko Inc., Yokohama, Midoriku, Japan* and I. Hatta, *Fukui University of Technology, Fukui, Japan*

**Thermal Conductivity of Chalcogenide As<sub>2</sub>S<sub>3</sub> Thin Films**

S.W. Kim\*, H. Yu and C.H. Kang, *University of Ulsan, Ulsan, Korea* and S.H. Lee and S.W. Kim, *Korea Research Institute of Standards and Science, Taejeon, Korea*

**Wetting and Interfaces**

**A Density Functional Approach to Wetting Behaviors of Ternary Water + Oil + Amphiphile Mixtures**

M.-C. Yeh\* and L.-J. Chen, *National Taiwan University, Taipei, Taiwan*

**Characterization of Wetting Behavior for Type III and IV Systems: A Topologic Approach**

A. Mejia\* and H. Segura, *Universidad de Concepción, Concepción, Chile*

**Flow Over a Sharp Chemical Step in the Lubrication Approximation**

M. Rauscher, S. Dietrich and A. Dominguez\*, *Max-Planck-Institut für Metallforschung, Stuttgart, Germany*

**Interfacial Behavior in Type IV Systems**

A. Mejia\* and H. Segura, *Universidad de Concepción, Concepción, Chile*

**Wednesday, June 25, 2003**

***Posters***

Chair: L. A. Watts

**Afternoon - 1:45 - 3:30**

**Room: UMC Ballroom**

**Wetting and Interfaces**

**Interfacial Surface Energy and Viscosity of Succinonitrile and Succinonitrile - Acetone Alloys at Various Temperatures using a Surface Light Scattering Spectrometer**

P. Tin\*, *National Center for Microgravity Research, Cleveland, OH, U.S.A.*, H. de Groh, *NASA Glenn Research Center, Cleveland, OH, U.S.A.* and M. Kassemi, *National Center for Microgravity Research, Cleveland, OH, U.S.A.*

**Surface Properties of Nonionic Surfactants in Aqueous Solutions of Alkanolamines**

J. Aguila-Hernández\* and A. Trejo, *Instituto Mexicano del Petróleo, México D. F., Mexico*

**Surface Tension of Non-aqueous Mixtures (Alkane + Alcohol, Alcoxialcohol, Diol or Polyether Binary Systems): Experimental Results and Analysis using the Prigogine-Marechal Theory**

L.M. Trejo\*, B. Salas, L.M. Moya, M. Costas and Torner, *Universidad Nacional Autónoma de México, México D. F., Mexico* and B. Kronberg, *The Institute for Surface Chemistry, Stockholm, Sweden*

**Wednesday, June 25, 2003**

***Software Demonstrations 2***

***See Software Demonstrations 1***

Chair: M. L. Huber and R. L. Rowley

**Afternoon - 1:45 - 3:30**

**Room: UMC 235**

**Wednesday, June 25, 2003**

***Inverse Problems in Thermophysics 3***

***Other Inverse Problems in Thermophysics***

Chair: C. Glorieux

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-151**

- 3:55 PM Visualization of Thermal Waves from Optical Reflectance Spectra**

R. Li Voti\*, *Università di Roma "La Sapienza", Roma, Italy*, O.B. Wright, O. Matsuda and M. Tomoda, *Hokkaido University, Sapporo, Japan* and C. Sibilia and M. Bertolotti, *Università di Roma "La Sapienza", Roma, Italy*

- 4:15 PM An Inverse Radiation Problem for Measurement of Surface Temperature under Industrial Conditions**

Y. Liu, X. Zhang\* and F. Yu, *University of Science and Technology, Beijing, P.R. China*

- 4:35 PM Thermophysical Data Inversion: The Limits of Uncertainty**

I. Herskowitz and G.G. Kuleshov\*, *Touro College, New York, NY, U.S.A.*

- 4:55 PM Coarse-Graining of Atomistic Simulations of Polymeric Melts to Access Long Length and Time Scales**

H.S. Ashbaugh\*, *Los Alamos National Laboratory, Los Alamos, NM, U.S.A.* and S. Garde and H. Patel, *Rensselaer Polytechnic Institute, Troy, NY, U.S.A.*

**Wednesday, June 25, 2003**

**Novel Instrumentation and Measurement Techniques 1**  
**Metrology**

Chair: T. J. Bruno

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-245**

**3:55 PM Microfluidic Devices for Complex Fluid Control**

J. Oakey\*, *Metafluidics Inc., Golden, CO, U.S.A.* and D.W. Marr,  
*Colorado School of Mines, Golden, CO, U.S.A.*

**4:15 PM Primary Acoustic Thermometry from 4 K to 300 K**

M.R. Moldover and L. Pitre\*, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

**4:35 PM Progress Towards a Primary Pressure Standard Based on the Dielectric Permittivity of Helium**

J.W. Schmidt\* and M.R. Moldover, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

**4:55 PM A Measuring System for Temperature and Velocity Monitoring in Thermal Plasma Spraying Processes**

V.N. Senchenko\* and V.S. Dozhdikov, *Russian Academy of Sciences, Moscow, Russia*, Yu.V. Vizilter, *State Research Institute of Aviation Systems, Moscow, Russia* and A.A. Borisov, *NPO "Lepton", Zelenograd, Russia*

## **Wednesday, June 25, 2003**

### **Phase Transitions/Metastable Fluids/Critical Phenomena 9**

#### **Phase Transitions and Critical Phenomena: Thermal Studies 1**

Chair: M. R. Moldover and J. Thoen

**Afternoon - 2: 3:50 - 5:35**

**Room: Math 100**

- 3:55 PM Thermodynamic Property Measurements Near the  ${}^3\text{He}$  Liquid-Gas Critical Point (Invited)**

M. Barmatz\*, F. Zhong and I. Hahn, *California Institute of Technology, Pasadena, CA, U.S.A.*

- 4:35 PM Thermal Equilibration Near the Liquid-Vapor Critical Point of  ${}^3\text{He}$**

F. Zhong\*, M. Weilert, I. Hahn and M. Barmatz, *California Institute of Technology, Pasadena, CA, U.S.A.* and P. Carles, *Universite' Pierre et Marie Curie, Paris, France*

- 4:55 PM High Resolution Specific Heat Measurement of  ${}^3\text{He}$  near the Liquid-Gas Critical Point**

F. Zhong\*, M. Weilert, M. Barmatz and I. Hahn, *California Institute of Technology, Pasadena, CA, U.S.A.*

- 5:15 PM Critical Behavior of the Heat Capacity of Crystals in the Region of Incommensurate Phase Transitions**

S.N. Kallaev\*, I.K. Kamilov, A.M. Aliev, Sh.B. Abdulvagidov, A.A. Amirova and A.B. Batdalov, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

**Wednesday, June 25, 2003**

***Properties for Chemical Process Design 4***

Chair: N. S. Foster-Mills and T. Autrey

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-200**

- 3:55 PM      Estimation of Thermophysical Pure Component Properties from Molecular Structure: Structure Editor, Group Assignment, Structure Database**

W. Cordes\*, *DDBST Gmb H, Oldenburg, Germany* and J. Rarey and J. Gmehling, *Carl von Ossietzky Universität, Oldenburg, Germany*

- 4:15 PM      Property Estimation for Chemical Product Design**

J. Marrero and R. Gani\*, *Technical University of Denmark, Lyngby, Denmark*

- 4:35 PM      Challenges in Thermodynamics**

W. Arlt\*, *Technische Universität Berlin, Berlin, Germany*

- 4:55 PM      A New Group-Contribution Lattice Fluid Equation of State Considering Hydrogen Bonding and Dimerization**

J.W. Kang, *Korea University, Seoul, Korea*, B.H. Park, *Korea Atomic Energy Institute, Taejeon, Korea*, K.-P. Yoo, *Sogang University, Seoul, Korea* and C.S. Lee\*, *Korea University, Seoul, Korea*

**Wednesday, June 25, 2003**

**Properties of Working Fluids, including Refrigerants 3**  
*Phase Equilibria and the Critical Region*

Chair: R. Perkins and M. O. McLinden

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-1B40**

- 3:55 PM      High Pressure Phase Behavior of Binary Systems of Refrigerants and n-Akylbenzenes**

Th.W. De Loos\* and W. Poot, *Delft University of Technology, Delft, The Netherlands*

- 4:15 PM      VLLE Measurements and Correlation for the R125 + R600 System**

L. Fedele\*, S. Bobbo and R. Camporese, *National Research Council, Padova, Italy* and R. Stryjek, *Polish Academy of Sciences, Warsaw, Poland*

- 4:35 PM      Determination of the Critical Parameters for Propane (R290) and Isobutane (R600a)**

Y. Higashi\*, *Iwaki Meisei University, Iwaki, Japan*

- 4:55 PM      Measurements of the Vapor-Liquid Coexistence Curve in the Critical Region for the Refrigerant Mixture HFC152a/HFC125**

J. Wu\*, Z. Liu, F. Wang and J. Pan, *Xi'an Jiaotong University, Shanghai, P.R. China*

- 5:15 PM      Scaling Models for Thermodynamic Properties of HFC 134a and HFC 143a on the Coexistence Curve**

E. Ustjuzhanin\*, *Moscow Power Engineering Institute, Moscow, Russia*, J.W. Magee, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*, J. Yata, *Kyoto Institute of Technology, Kyoto, Japan* and B. Reutov, B. Grigoriev and K. Jakovenko, *Moscow Power Engineering Institute, Moscow, Russia*

**Wednesday, June 25, 2003**

***Software Demonstrations 3***

***See Software Demonstrations 1***

Chair: M. L. Huber and R. L. Rowley

**Afternoon - 2: 3:50 - 5:35**

**Room: UMC 235**

**Wednesday, June 25, 2003**

**Theory and Modeling of Thermophysical Properties 7**  
**Other Topics**

Chair: C. McCabe and J. C. Rainwater

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-1B51**

- 3:55 PM Correlation and Prediction of Physical Properties using Step Potential Equilibria and Dynamics (SPEAD) (Invited)**

Z. Nevin Gerek, O. Unlu, N. Gray and J.R. Elliott\*, *The University of Akron, Akron, OH, U.S.A.*

- 4:35 PM Hard Dumbbell Free Energy Calculation Via the Fluctuating Cell Model**

S.A. Kadlec\* and J.C. Rainwater, *National Institute of Standards and Technology, Boulder, CO, U.S.A.* and P.D. Beale, *University of Colorado, Boulder, CO, U.S.A.*

- 4:55 PM Modification of the Supercritical Temperature-Dependent Attractive Parameter of a Simplified Perturbed Hard Sphere Equation of State**

K. Mulia\*, *University of Indonesia, Depok, Indonesia* and V.F. Yesavage, *Colorado School of Mines, Golden, CO, U.S.A.*

- 5:15 PM Thermophysical Properties of Fluids: From Simple Models to Applications**

I. Nezbeda\*, *Academy of Sciences, Prague, Czech Republic*

**Wednesday, June 25, 2003**

***Wetting and Interfaces 3***  
***Mixtures and Emulsions***

Chair: K. Rejmer

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-265**

- 3:55 PM Cahn-Landau Theory of First-Order, Critical and Tricritical Wetting at the Liquid-Vapor Interface of n-Alkane/Methanol Mixtures**

J.O. Indekeu\* and A.I. Posazhennikova, *Katholieke Universiteit, Leuven, Belgium*, D. Ross, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.* and D. Bonn and J. Meunier, *Ecole Normale Supérieure, Paris, France*

- 4:15 PM The Influence and Interpretation of Surface Parameters for Wetting Transitions in Ternary Mixtures**

C.J. Boulter\* and F. Clarysse, *Heriot-Watt University, Edinburgh, United Kingdom*

- 4:35 PM First-Order Transition Temperatures in the Sequential Wetting of Hexane on Brine**

V.C. Weiss\* and J.O. Indekeu, *Katholieke Universiteit, Leuven, Belgium*

- 4:55 PM Experimental Studies of Wetting Transitions**

J. Meunier\* and D. Bonn, *Ecole Normale Supérieure, Paris, France*

- 5:15 PM Dynamics of Drop Coalescence on a Surface: The Role of Initial Conditions and Surface Properties**

Ramchandr Narhe\* and D. Beysens, *CEA-Grenoble, Pessac, France*

**Wednesday, June 25, 2003**

**Molecular Simulation 1**

**Non-equilibrium Molecular Dynamics**

Chair: E. J. Maginn and J. I. Siepmann

**Evening: 7:30 - 9:15**

**Room: Math 100**

- 7:35 PM Non-Equilibrium Molecular Dynamics Simulations of Molten Sodium Chloride (Invited)**

J. Petracic\*, *The Australian National University, Canberra, Australia* and J. Delhommelle, *Universite Henri Poincare, Vandoeuvre-les-Nancy, France*

- 8:15 PM Shear Viscosity of Molten Potassium Chloride from Equilibrium and Nonequilibrium Molecular Dynamics Simulations**

N. Galamba\*, *Universidade de Lisboa, Lisboa, Portugal*, J.F. Ely, *Colorado School of Mines, Golden, CO, U.S.A.* and C.A. Nieto de Castro, *Universidade de Lisboa, Lisboa, Portugal*

- 8:35 PM Characterization of Strain Rate Exponents for the Pressure and Energy of Shearing Fluids**

J. Ge, B.D. Todd, G. Wu and R.J. Sadus\*, *Swinburne University of Technology, Hawthorn, Victoria, Australia*

- 8:55 PM Transient Nonequilibrium Molecular Dynamic Simulations of Thermal Conductivity**

R.J. Hulse\*, W.V. Wilding, J.L. Oscarson and R.L. Rowley, *Brigham Young University, Provo, UT, U.S.A.*

- 9:15 PM The Fermi-Pasta-Ulam Oscillating Chain: Thermostatting Mechanisms**

P. Tempatarachoke and D. Isbister\*, *University of New South Wales, Canberra, Australia*

**Wednesday, June 25, 2003**

**Novel Instrumentation and Measurement Techniques 2**  
**Solid Systems 1**

Chair: T. J. Bruno

**Evening: 7:30 - 9:15**

**Room: Eng-245**

**7:35 PM Evaluation of Clay Adsorbants by Liquid Chromatography**

K.E. Miller\* and T.J. Bruno, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

**7:55 PM Wide Wavelength Range Spectral Emissivity of the Solid and Liquid States up to 2500 K**

P. Echegut\*, O. Rozenbaum, J.F. Brun and D. De Sousa Meneses, *CNRS, Orléans, France*

**8:15 PM Measuring the Heat Storage Coefficient of a Porous Solid Matrix at Interstitial Gas Pressures using a Modified Planar Heat Source**

R. Singh\* and J. Ram, *University of Rajasthan, Jaipur, India* and S.K. Jain, *Govt. Engineering College, Kota, India*

**8:35 PM Thermal Conductivity of Reference Solid Materials**

M.J. Assael\* and K. Gialou, *Aristotle University, Thessaloniki, Greece*

**8:55 PM Nonlinear Photoacoustic Thermoelastic Effect in Stressed Solids**

K.L. Muratikov\* and A.L. Glazov, *Russian Academy of Science, St. Petersburg, Russia*, D.N. Rose, *U.S. Army TACOM, Warren, MI, U.S.A.* and J.E. Dumar, *Russian Academy of Science, St. Petersburg, Russia*

## **Wednesday, June 25, 2003**

### **Phase Transitions/Metastable Fluids/Critical Phenomena 10**

#### **Phase Transitions and Critical Phenomena: Thermal Studies 2**

Chair: Y. B. Melnichenko and J. Thoen

**Evening: 7:30 - 9:15**

**Room: Eng-265**

- 7:35 PM Microscopic Observations of Fluctuations near the Critical Point**

J. Hegseth\*, *University of New Orleans, New Orleans, LA, U.S.A.*, D. Beysens, *CEA-Grenoble, Pessac, France* and Y. Garrabos, *Institut de Chimie de la Matière Condensée de Bordeaux, Pessac, France*

- 7:55 PM High Resolution Studies of the Thermal Parameters and Structural Evolution at Liquid Crystal Phase Transitions**

M. Marinelli, F. Mercuri and Ugo Zammit\*, *Università di Roma "Tor Vergata", Roma, Italy*

- 8:15 PM Simultaneous and Precise Measurements of Thermal, Electrical and Acoustic Properties: New Feature of the 403 K Phase Transition in BaTiO<sub>3</sub>**

A. Kojima\* and H. Sasou, *The University of Shiga Prefecture, Shiga, Japan*, K. Tozaki and T. Okazaki, *Chiba University, Chiba, Japan* and Y. Yoshimura, N. Tokunaga and H. Iwasaki, *Ritsumeikan University, Shiga, Japan*

- 8:35 PM Thermal Properties of La<sub>1-x</sub>Sr<sub>x</sub>MnO<sub>3</sub> Across Phase Transitions**

A. Salazar\*, *Escuela Superior de Ingenieros, Bilbao, Spain*

- 8:55 PM A New Method for Determination of Critical Parameters of Pure Fluids**

J. Wu\*, Z. Liu and J. Pan, *Xi'an Jiaotong University, Shanghai, P.R. China*

**Wednesday, June 25, 2003**

***Properties for Chemical Process Design 5***

Chair: J. C. Rainwater

**Evening: 7:30 - 9:15**

**Room: Eng-200**

**7:35 PM Issues of Forum 2000, Three Years Later (Invited)**

J.C. Rainwater\*, *National Institute of Standards and Technology,  
Boulder, CO, U.S.A.*

**Wednesday, June 25, 2003**

***Properties of Working Fluids, including Refrigerants 4***  
***Equations of State***

Chair: M. O. McLinden

**Evening: 7:30 - 9:15**

**Room: Eng-1B40**

**7:35 PM    A New Reference Quality Equation of State for Ethane**

D. Bücker and W. Wagner\*, *Ruhr-Universität Bochum, Bochum, Germany*

**7:55 PM    Reliable Thermodynamic Property Information for Acceptable Hydrocarbon Refrigerants and Their Mixtures in the Entire Fluid Phase Region**

H. Miyamoto\* and M. Uematsu, *Keio University, Yokohama, Japan*

**8:15 PM    A Compact, Generalized Equation of State for Polar and Non-Polar Fluids**

L. Sun\*, S.B. Kiselev and J.F. Ely, *Colorado School of Mines, Golden, CO, U.S.A.*

**8:35 PM    Equations of State for New Refrigerants, Hydrocarbons, and Hydrofluoroethers**

Y. Kayukawa\*, M. Hasumoto, Y. Kano and K. Watanabe, *Keio University, Yokohama, Japan*

**8:55 PM    A New Functional Form and Fitting Techniques for Equations of State with Application to Pentafluoroethane (HFC-125)**

E.W. Lemmon\*, *National Institute of Standards and Technology, Boulder, CO, U.S.A.* and R.T Jacobsen, *Idaho National Engineering and Environmental Laboratory, Idaho Falls, ID, U.S.A.*

**Wednesday, June 25, 2003**

***Thermophysical Properties of Biomaterials 1***  
***Macroscopic Systems***

Chair: J. J. Alvarado-Gil and F. M. Vargas-Luna

**Evening: 7:30 - 9:15**

**Room: Eng-151**

- 7:35 PM Photothermal Investigations of De-Emulsification of Fat/Water-Based Pasty Materials: Margarine (Invited)**

I. Delgadillo-Holtfort\*, *Ruhr-Universität Bochum, Bochum, Germany* and E. Correia Da Silva, *Inst. de Física Gleb Wataghin, São Paulo, Brazil*

- 8:15 PM Thermal, Structural and Mechanical Characterization of Strombus Gigas Shells**

A. Hernández, *CINVESTAV, Mérida, Yucatan, Mexico*, J.P. Valcárcel, *Surcolombian University, Neiva, Colombia*, M. Vargas-Luna\*, *Universidad de Guanajuato, León, Mexico* and P. Quintana, D. Aldana and J.J. Alvarado-Gil, *CINVESTAV, Mérida, Yucatan, Mexico*

- 8:35 PM Thermal Characterization of Pine, Swietenia Macrophylla and Cedrela Odorata Woods by Photoacoustic and Photothermal Techniques**

L. Villaseñor\*, J. Cruz-de-León and S. Lucas, *University of Michoacan, Morelia, Mexico*

**Wednesday, June 25, 2003**

***Wetting and Interfaces 4***  
***Experiment***

Chair: C. J. Boulter

**Evening: 7:30 - 9:15**

**Room: Eng-155**

- 7:35 PM      Surface Adsorption and Orientation near the Critical Point  
of Binary Liquid Mixtures**

J.-H.J. Cho\* and B.M. Law, *Kansas State University, Manhattan,  
KS, U.S.A.*

- 7:55 PM      Moving Contact Lines in Heated Liquid Films**

A. Oprisan\* and J. Hegseth, *University of New Orleans, New  
Orleans, LA, U.S.A.*, D. Beysens, *CEA-Grenoble, Pessac,  
France* and Y. Garrabos, *Institut de Chimie de la Matière  
Condensée de Bordeaux, Pessac, France*

- 8:15 PM      Isotherms of Water Adsorption/Desorption on Porous  
Solids at Temperatures between 105 and 250 °C**

M.S. Gruszkiewicz\*, J.M. Simonson, T.D. Burchell and D.R. Cole,  
*Oak Ridge National Laboratory, Oak Ridge, TN, U.S.A.*

- 8:35 PM      Mullins-Sekerka Instability and Phase Transitions in the  
Dioctadecylamine Monolayer**

A.L. Flores\* and R. Castillo, *National University of Mexico, México  
D. F., Mexico*

- 8:55 PM      Transient Foams of Nonionic Surfactants in Aqueous  
Solutions of Alkanolamines**

J. Aguilera-Hernández\* and A. Trejo, *Instituto Mexicano del  
Petróleo, México D. F., Mexico*

## Thursday, June 26, 2003

### **Molecular Simulation 2**

#### *Interfacial Systems and Adsorption*

Chair: J. G. Curro and J. I. Siepmann

**Morning - 1: 8:30 - 10:15**

**Room: Eng-200**

- 8:35 AM Thermodynamic and Structural Properties of Water at the Interfaces with Inorganic Layered Materials: Molecular Dynamics Simulation**

A.G. Kalinichev\* and R.J. Kirkpatrick, *University of Illinois at Urbana-Champaign, Urbana, IL, U.S.A.*

- 8:55 AM Molecular Simulations of Hydration and Swelling in Clay Minerals**

D.E. Smith\* and H.D. Whitley, *New Mexico State University, Las Cruces, NM, U.S.A.*

- 9:15 AM Molecular Simulations of Ion Exchange in NaA Zeolite Membranes**

S. Murad\*, W. Jia and M. Krishnamurthy, *University of Illinois at Chicago, Chicago, IL, U.S.A.*

- 9:35 AM Change of Free Energy During Adsorption of a Molecule**

J. Fischer, M. Mecke, M. Wendland\* and W. Billes, *Universität für Bodenkultur, Wien, Austria*

- 9:55 AM Molecular Simulation of Nucleation Phenomena**

J.I. Siepmann\*, *University of Minnesota, Minneapolis, MN, U.S.A.*  
and B. Chen and M.L. Klein, *University of Pennsylvania, Philadelphia, PA, U.S.A.*

**Thursday, June 26, 2003**

**NIST Thermodynamics Research Center Consortium**  
**Annual Workshop 1**  
*Open Session: See separate agenda.*

Chair: M. Frenkel

**Morning - 1: 8:30 - 10:15**

**Room: CECC-4**

**8:35 AM      Overview of 2002-2003 TRC Activities**

*M. Frenkel\*, National Institute of Standards and Technology,  
Boulder, CO, U.S.A.*

**9:40 AM      The TRC Data Entry Facility**

*R.D. Chirico\*, National Institute of Standards and Technology,  
Boulder, CO, U.S.A.*

**Thursday, June 26, 2003**

***Non-Destructive Evaluation with Thermophysics 1***

Chair: A. Mandelis

**Morning - 1: 8:30 - 10:15**

**Room: Eng-1B40**

- 8:35 AM Photothermal Characterization of the Thermophysical Properties of Liquids and Solids (Invited)**

C. Glorieux\*, *Katholieke Universiteit, Leuven, Belgium*

- 9:15 AM Non-Destructive Thermal Diagnostics of Porous Materials (Invited)**

E. Litovsky\*, S. Horodetsky and J. Kleiman, *Integrity Testing Laboratory Inc., Markham, Ontario, Canada*

- 9:55 AM Thermo-optical Sound Generation in Heterogeneous Media by Bessel Light Beams**

P. Astakhov\*, *Gomel Higher Commanding and Engineering School of the Ministry for Emergency Situations, Gomel, Belarus* and G. Mityurich, *Belarusian Trade and Economics University, Gomel, Belarus*

**Thursday, June 26, 2003**

**Novel Instrumentation and Measurement Techniques 3**  
**Solid Systems 2**

Chair: T. J. Bruno

**Morning - 1: 8:30 - 10:15**

**Room: Eng-245**

- 8:35 AM Design and Construction of a High-Pressure Cell for Use in X-ray Diffraction**

Z. Huo\*, M. Eaton and E.D. Sloan, *Colorado School of Mines, Golden, CO, U.S.A.*

- 8:55 AM The In-Situ Measurement of the Hygrothermic State of Thermal Insulations and the Thermal Performance of Capillary-Porous Materials and Building Components**

H. Stopp\* and P. Strangfeld, *University of Applied Sciences, Cottbus, Germany* and P. Häupl, *Technical University Dresden, Dresden, Germany*

- 9:15 AM Application of the 3/omega Method to Glass Transition Phenomena in 2-Butoxyethanol Isomers**

T. Atake\*, S. Nishimura, T. Tojo and H. Kawaji, *Tokyo Institute of Technology, Yokohama, Japan*

- 9:35 AM Determination of Interfacial Kinetic Mechanisms During Crystal Growth by in situ Measurement of Supercooling Versus Time**

S.V. Bykova, *Center for Thermophysical Researches "Thermo", Alexandrov, Vladimir, Russia*, J.J. Derby, *University of Minnesota, Minneapolis, MN, U.S.A.*, V.D. Golyshev\* and M.A. Gonik, *Center for Thermophysical Researches "Thermo", Alexandrov, Vladimir, Russia*, P. Sonda, *University of Minnesota, Minneapolis, MN, U.S.A.*, V.B. Tsvetovsky, *Center for Thermophysical Researches "Thermo", Alexandrov, Vladimir, Russia* and A. Yeckel, *University of Minnesota, Minneapolis, MN, U.S.A.*

-continued on next page-

**Thursday, June 26, 2003**

**Novel Instrumentation and Measurement Techniques 3**  
**Solid Systems 2**

Chair: T. J. Bruno

**Morning - 1: 8:30 - 10:15**

**Room: Eng-245**

**9:55 AM Measurements of Melt-Crystal Interface Supercooling  
using an Optical Pyrometer**

S.V. Bykova, *Center for Thermophysical Researches "Thermo",  
Alexandrov, Vladimir, Russia*, V.S. Dozhdikov, *Russian  
Academy of Sciences, Moscow, Russia*, V.D. Golyshev\* and  
M.A. Gonik, *Center for Thermophysical Researches "Thermo",  
Alexandrov, Vladimir, Russia*, V.A. Petrov, *Institute for High  
Energy Densities, Moscow, Russia* and V.N. Senchenko,  
*Russian Academy of Science, Moscow, Russia*

**Thursday, June 26, 2003**

***Optical and Thermal Radiative Properties of Materials 3***

Chair: J. Liu

**Morning - 1: 8:30 - 10:15**

**Room: Eng-1B51**

- 8:35 AM      Spectral Emissivities of Bright and Oxidized Metals at High Temperatures**

W. Bauer\*, *University Duisburg-Essen, Duisburg, Germany*, H. Oertel, *G/WEB Energie- und Prozesstechnik GmbH, Mülheim, Germany* and M. Rink, *University Duisburg-Essen, Duisburg, Germany*

- 8:55 AM      Spectral Absorptivity and Thermal Conductivity of BGO and BSO in Melt and Single Crystal State**

S.V. Bykova, V.D. Golyshev\*, M.A. Gonik, V.B. Tsvetovsky and E.V. Yakovleva, *Center for Thermophysical Researches "Thermo", Alexandrov, Vladimir, Russia*

- 9:15 AM      Bidirectional Reflectance Measurements of Silicon Microstructures**

Y.B. Chen\*, Q.Z. Zhu, T.L. Wright, W.P. King and Z.M. Zhang, *Georgia Institute of Technology, Atlanta, GA, U.S.A.*

- 9:35 AM      Measurements and Analysis of the Spectral Emissivity of Dielectric Oxides, Below and Above the Melting Point**

J.F. Brun\*, D. De Sousa Meneses and P. Echegut, *CNRS, Orléans, France*

**Thursday, June 26, 2003**

**Phase Transitions/Metastable Fluids/Critical Phenomena 11**

**Phase Equilibria and Equations of State**

Chair: A. Laesecke and M. A. Anisimov

**Morning - 1: 8:30 - 10:15**

**Room: Math 100**

**8:35 AM      The Discovery of Type-IV Binary Fluid Phase Behavior**

J.M.H. Levelt Sengers\*, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

**8:55 AM      A Crossover Corresponding States Model for Pure Fluids and Nuclear Matter**

S.B. Kiselev\* and J.F. Ely, *Colorado School of Mines, Golden, CO, U.S.A.* and I.V. Kononenko, *Gubkin Russian State University of Oil and Gas, Moscow, Russia*

**9:15 AM      Global Cubic Equation of State for Pure Fluids**

M.Yu. Belyakov\* and E.E. Gorodetskii, *Russian Academy of Sciences, Moscow, Russia* and M.A. Anisimov and J.V. Sengers, *University of Maryland, College Park, MD, U.S.A.*

**9:35 AM      Parametric Equation of State and Correlations in Supercritical Water and Krypton: A Comparison.**

M. Bonetti\*, P. Calmettes and C. Bervillier, *CEA de Saclay, Gif-sur-Yvette, France*

**Thursday, June 26, 2003**

***Thermophysical Properties of Biomaterials 2***

***Microscopic Level 1***

Chair: F. M. Vargas-Luna and J. J. Alvarado-Gil

**Morning - 1: 8:30 - 10:15**

**Room: Eng-151**

**8:35 AM      Theoretical Models for Cell Adhesion**

P. Lenz\*, *Institut Curie, Paris, France*, H. Ayari and D. Riveline,  
*Universite Joseph Fourier, Saint-Martin d'Heres, France* and J.-F. Joanny, *Institut Curie, Paris, France*

**8:55 AM      Modeling Protein/Ligand Interactions in Water**

S. Rempe\*, *Sandia National Laboratories, Albuquerque, NM, U.S.A.*

**9:15 AM      Phase Transitions and Conformational Changes in Monolayers of Human Apolipoproteins C1 and AII**

J. Ruiz-Garcia, *UASLP, San Luis Potosí, Mexico*, A. Moreno, *UNAM. Circuito Exterior, México D. F., Mexico*, G. Grezesinski and H. Möhwald, *Max-Planck-Institute of Colloids and Interfaces, Potsdam, Germany* and R. Castillo\*, *Universidad Nacional Autónoma de México, México D. F., Mexico*

**9:35 AM      Molecular Studies of the Role of Protectants in Cryopreservation and Lyophilization of Biological Systems**

A.K. Sum\* and J.J. de Pablo, *University of Wisconsin, Madison, WI, U.S.A.*

**Thursday, June 26, 2003**

***Wetting and Interfaces 5***  
***Simulation***

Chair: C. J. Boulter

**Morning - 1: 8:30 - 10:15**

**Room: Eng-265**

- 8:35 AM      Interplay between Wetting and Phase Behavior in Binary Polymer Films: Monte Carlo Simulations and Mean Field Calculations (Invited)**

M. Muller\* and K. Binder, *Johannes Gutenberg Universitaet, Mainz, Germany*

- 9:15 AM      Phase Behavior and Dynamics of Fluids in Mesoporous Glasses: Understanding Hysteresis**

H.-J. Woo and P.A. Monson\*, *University of Massachusetts, Amherst, MA, U.S.A.*

- 9:35 AM      Spreading of Liquid Monolayers on Chemically Patterned Substrates -- Kinetic Monte Carlo Simulations and the Continuum Limit**

M.N. Popescu\* and S. Dietrich, *Max-Planck-Institut fur Metallforschung, Stuttgart, Germany*

**Thursday, June 26, 2003**

**Molecular Simulation 3**

**Phase Equilibria**

Chair: J. R. Errington and J. I. Siepmann

**Morning - 2: 10:35 - 12:20**

**Room: Eng-200**

- 10:40 AM Direct Calculation of Liquid-Vapor Phase Equilibria from Transition Matrix Monte Carlo Simulations**

J.R. Errington\*, *The State University of New York, Buffalo, NY, U.S.A.*

- 11:00 AM Development of Finely Lattice Discretized Models for Real Fluids**

S. Moghaddam\*, *University of Maryland, College Park, MD, U.S.A.* and A.Z. Panagiotopoulos, *Princeton University, Princeton, NJ, U.S.A.*

- 11:20 AM Solid-Fluid Equilibrium in Benzene-Hexafluorobenzene Mixtures: Congruent Melting from a Molecular Model**

J. Schroer and P.A. Monson\*, *University of Massachusetts, Amherst, MA, U.S.A.*

- 11:40 AM Computer Simulations and Crossover Equation of State of Square-Well Fluids with Variable Width**

J.R. Elliott\*, *The University of Akron, Akron, OH, U.S.A.*, S.B. Kiselev and J.F. Ely, *Colorado School of Mines, Golden, CO, U.S.A.* and L. Lue, *UMIST, Manchester, United Kingdom*

- 12:00 PM Quantum-and-Molecular Integrated Simulation of Thermal Properties of Nitrogen**

T. Inoue\* and Y. Sakano, *Tokyo Institute of Technology, Tokyo, Japan*

- 12:20 PM Superheated Crystal: Thermodynamic Properties, Stability Criteria, Homogeneous Nucleation and Melting**

G.E. Norman\* and V.V. Stegailov, *Russian Academy of Sciences, Moscow, Russia*

**Thursday, June 26, 2003**

**NIST Thermodynamics Research Center Consortium Annual  
Workshop 2**

*Open Session: See separate agenda.*

Chair: M. Frenkel

**Morning - 2: 10:35 - 12:05**

**Room: CECC-4**

**10:40 AM Enhancement in the TRC Database Management System**

*Q. Dong\*, National Institute of Standards and Technology,  
Boulder, CO, U.S.A.*

**11:05 AM Tool Development for Dynamic Data Evaluation**

*V.V. Diky\*, National Institute of Standards and Technology,  
Boulder, CO, U.S.A.*

**11:35 AM Progress in the TRC Integrated Data Prediction Software  
Package**

*X.J. Yan\*, National Institute of Standards and Technology,  
Boulder, CO, U.S.A.*

**Thursday, June 26, 2003**

***Non-Destructive Evaluation with Thermophysics 2***

Chair: E. Litovsky

**Morning - 2: 10:35 – 12:40**

**Room: Eng-151**

- 10:40 AM Reconstruction and Analysis of Pulsed Thermographic Data (Invited)**

S.M. Shepard\*, *Thermal Wave Imaging, Inc., Ferndale, MI, U.S.A.*

- 11:10 AM Characterization of Laser-Active Glasses by Photothermal and Thermo-Optical Measurements (Invited)**

H.G. Walther\*, *Institute of Optics and Quantum Electronics, Jena, Germany* and S. Paoloni, *Università di Roma "La Sapienza", Roma, Italy*

- 11:40 PM Thermal Wave Scattering by Buried Spheres**

F. Garrido and A. Salazar\*, *Escuela Superior de Ingenieros, Bilbao, Spain*

- 12:00 PM Photodeflection Method of Investigation of the Thermophysical Properties of Heterogeneous Media with Use of Laser Bessel Beams**

P. Astakhov\*, *Gomel Higher Commanding and Engineering School of the Ministry for Emergency Situations, Gomel, Belarus* and G. Mityurich, *Belarusian Trade and Economics University, Gomel, Belarus*

- 12:20 PM Nondestructive Evaluation of the Thermal Properties of Three-Layer Fuel Cell Electrodes Using Photothermal Deflection Spectrometry**

C. Hu and J. Zhao, *National Research Council of Canada, Vancouver, British Columbia, Canada*, T. Navessin, *National Research Council of Canada and Simon Fraser University, Vancouver, British Columbia, Canada* and S. Holdcroft and J. Shen\*, *National Research Council of Canada, Vancouver, British Columbia, Canada*

**Thursday, June 26, 2003**

**Novel Instrumentation and Measurement Techniques 4**  
**Transport 1**

Chair: T. J. Bruno

**Morning - 2: 10:35 - 12:20**

**Room: Eng-245**

- 10:40 AM A New Technique for Thermal Diffusivity Measurements in Hydrate-Sediment Mixtures**

D.J. Turner\*, P. Kumar and E.D. Sloan, *Colorado School of Mines, Golden, CO, U.S.A.*

- 11:00 AM Measurements of Thermal Effusivity of a Drop-size Liquid using the Pulse Transient Hot Strip Technique**

M. Gustavsson\*, H. Nagai and T. Okutani, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

- 11:20 AM Pulse Hot Strip (PHS) Method: Uncertainty Assessment**

U. Hammerschmidt\*, *Physikalisch-Technische Bundesanstalt, Braunschweig, Germany*

- 11:40 AM Quasi-Steady Hot Wire/Hot Strip Method: Uncertainty Assessment**

U. Hammerschmidt\*, *Physikalisch-Technische Bundesanstalt, Braunschweig, Germany*

- 12:00 PM A Modified Sealed Gravitational Capillary Viscometer for Volatile Liquids**

J. Wu\*, Z. Liu and S. Bi, *Xi'an Jiaotong University, Shanghai, P.R. China*

**Thursday, June 26, 2003**

***Optical and Thermal Radiative Properties of Materials 4***

Chair: Z. Zhang

**Morning - 2: 10:35 - 12:20**

**Room: Eng-1B51**

- 10:40 AM Status of the NIST Facility for Spectral and Total Directional Emittance Measurements**

L.M. Hanssen\*, S.N. Mekhontsev and V.B. Khromchenko,  
*National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

- 11:00 AM Measurement of the Infrared Spectral Directional Hemispherical Reflectance and Emissivity at BNM-LNE**

J. Hameury\*, J.-R. Filtz and B. Hay, *BNM-LNE, Paris, France*

- 11:20 AM Photoluminescence and Photostructural Conversion in Deformed Laminated Crystals of  $\text{As}_2\text{S}_3$ ,  $\text{GeSe}_2$ , and  $\text{As}_2\text{Se}_3$**

A.A. Babaev\*, I.K. Kamilov, A.M. Askhabov and S.B. Sultanov,  
*Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

- 11:40 AM Forming the Nanoparticles of Uranium Dioxide in an Electromagnetic Field**

T.P. Salikhov\* and V.V. Kan, *Physical Technical Institute, Tashkent, Uzbekistan*

**Thursday, June 26, 2003**

**Phase Transitions/Metastable Fluids/Critical Phenomena 12**

**Critical Phenomena: Acoustic Studies and Viscosity**

Chair: J. Thoen and M. A. Anisimov

**Morning - 2: 10:35 - 12:20**

**Room: Math 100**

**10:40 AM Acoustical Impedance of Sulfur Near the Polymerization Transition**

J.K. Olson and W.B. Payne, *University of Utah, Salt Lake City, UT, U.S.A.*, C. Inglefield, *Weber State University, Ogden, UT, U.S.A.* and V.F. Kozhevnikov\* and P.C. Taylor, *University of Utah, Salt Lake City, UT, U.S.A.*

**11:00 AM Thermoacoustic Boundary Layers Near the Critical Point**

K.A. Gillis\*, I.I. Shinder and M.R. Moldover, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

**11:20 AM Low-frequency Acoustic Measurements in Xenon Near the Critical Point**

I.I. Shinder\*, K.A. Gillis and M.R. Moldover, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

**11:40 AM Viscoelasticity and Shear Thinning Near the Critical Point of Xenon**

R.F. Berg\*, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*, M. Yao, *NASA Glenn Research Center, Cleveland, OH, U.S.A.* and M.R. Moldover, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

**12:00 PM Thermo-Acoustic Convection as a Means to Measure Near-Critical Bulk Viscosity**

P. Carlès\* and K. Dadzie, *Université Pierre et Marie Curie, Paris, France* and F. Zhong, *California Institute of Technology, Pasadena, CA, U.S.A.*

**Thursday, June 26, 2003**

**Properties of Aqueous Systems 1**  
**High-Temperature Electrolytes**

Chair: A H. Harvey

**Morning - 2: 10:35 - 12:20**

**Room: Eng-1B40**

- 10:40 AM Recent Progress in Predicting Free Energy of Aqueous Solutes at High Temperatures (Invited)**

R.H. Wood\*, W. Liu and D.J. Doren, *University of Delaware, Newark, DE, U.S.A.*

- 11:20 AM Molecular Simulation of Hydration and  $\text{Na}^+$   $\text{Cl}^-$  Pair Association in High-Temperature Aqueous Solutions along Sub- and Supercritical Isotherms.**

A.A. Chialvo\* and J.M. Simonson, *Oak Ridge National Laboratory, Oak Ridge, TN, U.S.A.*

- 11:40 AM PVTx Measurements for Aqueous  $\text{NaNO}_3$  Solutions**

I.M. Abdulagatov\*, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia* and N.D. Azizov, *Azerbaijan State Oil Academy, Baku, Azerbaijan*

- 12:00 PM Molecular-Scale Structure, Modeling and Thermodynamic Properties of Aqueous Nickel Chloride Solutions at High Temperatures**

J.M. Simonson\*, P.C. Ho, Y.S. Badyal and A.A. Chialvo, *Oak Ridge National Laboratory, Oak Ridge, TN, U.S.A.*

**Thursday, June 26, 2003**

***Properties of Solids 1***

***Reference Materials***

Chair: N. T. Wright

**Morning - 2: 10:35 - 12:20**

**Room: Eng-265**

- 10:40 AM      The NPL Measurements Contribution to the Certification of Pyroceram 9606 as a Reference Material for Thermal Properties**

D.R. Salmon\*, R.P. Tye and N. Lockmuller, *National Physical Laboratory, Teddington, Middlesex, United Kingdom*

- 11:00 AM      Intercomparison of Measurements of the Thermophysical Properties of Polymethyl Methacrylate**

S. Rudtsch\*, *Physikalisch-Technische Bundesanstalt, Berlin, Germany* and U. Hammerschmidt, *Physikalisch-Technische Bundesanstalt, Braunschweig, Germany*

- 11:20 AM      The Development of a Standard for Contact Transient Methods of Measurement of Thermophysical Properties**

R.P. Tye\*, *National Physical Laboratory, Teddington, Middlesex, United Kingdom*, L. Kubicar, *Slovak Academy of Sciences, Bratislava, Slovakia* and N. Lockmuller, *National Physical Laboratory, Teddington, Middlesex, United Kingdom*

- 11:40 AM      Thermal Diffusivity Measurements of Candidate Reference Materials by the Laser Flash Method**

M. Akoshima\* and T. Baba, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

**Thursday, June 26, 2003**

**Molecular Simulation 4**

**Complex Fluids**

Chair: J. I. Siepmann

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-200**

- 1:50 PM Large-Scale Molecular Dynamics Simulation of Polyolefin Blends (Invited)**

J.G. Curro\*, *Sandia National Laboratories, Albuquerque, NM, U.S.A.*, E. Jaramillo, *Colorado School of Mines, Golden, CO, U.S.A.*, G.S. Grest, *Sandia National Laboratories, Albuquerque, NM, U.S.A.* and D.T. Wu, *Colorado School of Mines, Golden, CO, U.S.A.*

- 2:30 PM Non-Equilibrium Molecular Dynamics Simulation of Dendrimers under Shear**

L. Lue\*, *UMIST, Manchester, United Kingdom* and J.T. Bosko, B.D. Todd and R.J. Sadus, *Swinburne University of Technology, Hawthorn, Victoria, Australia*

- 2:50 PM Ultimate Uniaxial Tensile Strength of n-Alkane Glasses Determined via the Energy Landscape Formalism**

V.K. Shen\* and R.D. Mountain, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

- 3:10 PM Solubility of Oxygen in Liquid Pyridine**

R.D. Mountain\* and P.T. Beaton, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.*

**Thursday, June 26, 2003**

**Novel Instrumentation and Measurement Techniques 5**  
**Transport 2**

Chair: T. J. Bruno

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-245**

- 1:50 PM Thermal Diffusivity Measurements by Photothermal and Thermographic Techniques**

P.G. Bison\*, CNR-ITC, Padova, Italy, F. Cernuschi and A. Figari, CESI, Segrate, Italy and S. Marinetti and E. Grinzato, CNR-ITC, Padova, Italy

- 2:10 PM Thermophysical Properties of Inhomogenous Structures Measured by Pulse Transient Methods**

L. Kubicár\*, V. Bohac and V. Vretenár, Institute of Physics SAS, Bratislava, Slovakia, Š. Barta, Slovak Technical University, Bratislava, Slovakia and G. Neuer, University of Stuttgart, Stuttgart, Germany

- 2:30 PM Ionic Conductivity of Glass Melts at High Temperature (up to 1900 K)**

M. Malki\* and P. Echegut, CNRS, Orléans, France

- 2:50 PM Uncertainty of Thermal Diffusivity Measurements Using the Laser Flash Method**

L. Vozar\*, Constantine the Philosopher University, Nitra, Slovakia and W. Hohenauer, ARC Seibersdorf Research GmbH, Seibersdorf, Austria

- 3:10 PM Measurement of Thermal Properties by High Speed and Micro-scale IR Cameras**

J. Morikawa\* and T. Hashimoto, Tokyo Institute of Technology, Tokyo, Japan

**Thursday, June 26, 2003**

**Properties of Aqueous Systems 2**  
**High-Temperature Nonelectrolytes**

Chair: A.H. Harvey

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-1B40**

- 1:50 PM Hydration Properties of Dilute Aqueous Solutions of Hydrocarbons up to the Critical Region of Water: Experimental Data and Modeling**

V. Majer\*, *Université Blaise Pascal, Aubière, France*, J. Sedlbauer, *Technical University of Liberec, Liberec, Czech Republic*, S. Degrange, *Gaz de France, Saint Denis la Plaine, France* and V. Hynek, *Prague Institute of Chemical Technology, Prague, Czech Republic*

- 2:10 PM Prediction of the Krichevskii Parameter for Volatile Nonelectrolytes in Water**

A.V. Plyasunov\* and E.L. Shock, *Arizona State University, Tempe, AZ, U.S.A.*

- 2:30 PM Equation of State and Thermodynamic Properties of Dilute Supercritical Aqueous n-Hexane Solutions.**

S.B. Kiselev\* and J.F. Ely, *Colorado School of Mines, Golden, CO, U.S.A.*, I.M. Abdulagatov and A.R. Bazaev, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia* and J.W. Magee, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

- 2:50 PM Group Contributions for an Estimation of Partial Molar Volumes at Infinite Dilution for Aqueous Organic Solutes at Extended Ranges of Temperature and Pressure**

L. Hnedkovsky and I. Cibulka\*, *Prague Institute of Chemical Technology, Prague, Czech Republic*

- 3:10 PM Thermodynamic Description of Aqueous Non-Electrolytes at Infinite Dilution over a Wide Range of State Parameters**

N.N. Akinfiev\*, *University of Bern, Institute of Geological Sciences, Bern, Switzerland* and L.W. Diamond, *University of Bern, Bern, Switzerland*

**Thursday, June 26, 2003**

***Properties of Solids 2***

***Porous Solids***

Chair: N. T. Wright

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-265**

**1:50 PM      Thermophysical Property Measurements on Mold Materials**

S.I. Bakhtiyarov\*, R.A. Overfelt and D. Wang, *Auburn University, Auburn, AL, U.S.A.*

**2:10 PM      Correlation between Chemical Evolution and Thermophysical Properties of Cement Pastes: Influence of Temperature and Water/Binder Ratio**

P. Mounanga\*, G. Bastian and A. Khelidj, *I.U.T. de Saint-Nazaire, Saint-Nazaire, France*

**2:30 PM      Hygric Material Properties of Porous Building Materials**

P. Häupl\* and H. Fechner, *Technical University Dresden, Dresden, Germany*

**2:50 PM      Effect of Fly Ashes on the Rheological Properties of Fresh Cement Mortars**

K.T. Yucel\*, *Suleyman Demirel University, Isparta, Turkey*

**Thursday, June 26, 2003**

***Properties of Working Fluids, including Refrigerants 5***  
***Experimental Thermodynamics 1***

Chair: M. O. McLinden

**Afternoon - 1: 1:45 - 3:30**

**Room: Eng-155**

- 1:50 PM Virial Coefficients from Burnett Measurements for the R116 + CO<sub>2</sub> System**

G. Di Nicola\*, G. Giuliani, G. Passerini and F. Polonara,  
*Università di Ancona, Ancona, Italy* and R. Stryjek, *Polish Academy of Sciences, Warsaw, Poland*

- 2:10 PM Second Virial Coefficients for Pure HFC Refrigerants and Their Mixtures with R744: Theoretical Calculations in Comparison with Experimental Data**

J. Avsec\*, *University of Maribor, Maribor, Slovenia*, G. Di Nicola,  
*Università di Ancona, Ancona, Italy*, M. Marcic, *University of Maribor, Maribor, Slovenia* and F. Polonara, *Università di Ancona, Ancona, Italy*

- 2:30 PM Measurements of Thermodynamic Properties for the Propane + Isobutane System by the Burnett Method**

T. Adachi\*, T. Hondo, Y. Kayukawa and K. Watanabe, *Keio University, Yokohama, Japan*

- 2:50 PM Measurement of Gas Phase PVT Properties for Binary Mixtures of Difluorethane (HFC152a) and Pentafluorethane (HFC125)**

Z. Liu, J. Wu\* and J. Pan, *Xi'an Jiaotong University, Shanghai, P.R. China*

**Thursday, June 26, 2003**

***Thermophysical Properties of Biomaterials 3***  
***Microscopic Level 2***

Chair: J. J. Alvarado-Gil and F. M. Vargas-Luna

**Afternoon - 1: 1:45 - 2:30**

**Room: Eng-151**

**1:50 PM      Measurement of the Isothermal Compressibility of  
Hydrated Myoglobin by Small-Angle Neutron Scattering**

C. Loupiac, M. Bonetti\*, S. Pin and P. Calmettes, *CEA de Saclay,  
Gif-sur-Yvette, France*

**2:10 PM      Thermoelectrical Phenomena in Membrane Structures**

A.V. Chalyi, *National Medical University, Kiev, Ukraine* and S.P. Samko\*, *Kiev National Taras Shevchenko University, Kiev, Ukraine*

**Thursday, June 26, 2003**

***Ionic Liquids and Other Solvents 3***

Chair: M. Frenkel

**Afternoon - 2: 3:50 - 5:35**

**Room: Math 100**

**3:55 PM    Ionic Liquid Heat Transfer Fluids**

M.E. Van Valkenburg, R.L. Vaughn, M. Williams and J.S. Wilkes\*,  
*U.S. Air Force Academy, Colorado Springs, CO, U.S.A.*

**4:15 PM    Viscosity of Ionic Liquids and Diffusion-Controlled  
Reaction Rate Constants**

P. Neta\*, *National Institute of Standards and Technology,  
Gaithersburg, MD, U.S.A.*

**4:35 PM    Panel Discussion: Advances in Thermophysical Property  
Research on Ionic Liquids, Ionic Liquid Mixtures, and a  
Comprehensive Properties Database (Invited)**

J.F. Brennecke, *University of Notre Dame, South Bend, IN,  
U.S.A.*, M. Frenkel and J.W. Magee\*, *National Institute of  
Standards and Technology, Boulder, CO, U.S.A.* and K.N. Marsh,  
*University of Canterbury, Christchurch, New Zealand*

**Thursday, June 26, 2003**

**Novel Instrumentation and Measurement Techniques 6**  
**Systems at Equilibrium 1**

Chair: T. J. Bruno

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-245**

- 3:55 PM      Apparatus for Wide-Ranging, High-Accuracy Fluid p-ρ-T Measurements Based on a Compact Two-Sinker Densimeter**

M.O. McLinden\*, *National Institute of Standards and Technology, Boulder, CO, U.S.A.* and C. Lösch, *Rubotherm Präzisionsmesstechnik GmbH, Bochum, Germany*

- 4:15 PM      Measurement of Saturated Liquid Densities by a New Apparatus with a Buoyancy Method**

B. Saleh and M. Wendland\*, *Universität für Bodenkultur, Wien, Austria*

- 4:35 PM      A Vapor Entraining Magnetic Mixer for Equilibrium, Reaction and Extraction Applications**

T.J. Bruno\* and W.C. Andersen, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

**Thursday, June 26, 2003**

***Phenomena at Ultrashort Time/Length Scales 1***

Chair: A. N. Smith and P. M. Norris

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-151**

- 3:55 PM Thermal Characterization of the Cu/CoFe Giant Magnetoresistive Multilayer (Invited)**

M. Asheghi\*, *Carnegie Mellon University, Pittsburgh, PA, U.S.A.*

- 4:35 PM Thermalization of Photoexcited Carriers in InP Based Films**

J.M. Klopf\*, *University of Virginia, Charlottesville, VA, U.S.A.*,  
A.N. Smith, *U.S. Naval Academy, Annapolis, MD, U.S.A.*, J.L.  
Hostetler, *Princeton Lightwave, Inc., Princeton, NJ, U.S.A.* and  
P. Norris, *University of Virginia, Charlottesville, VA, U.S.A.*

- 4:55 PM Thermal Diffusivity Measurements Across Submicrometer Metal Thin Films by the Picosecond Thermoreflectance Method**

N. Taketoshi\*, T. Baba and A. Ono, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

**Thursday, June 26, 2003**

**Properties of Aqueous Systems 3**  
*Experimental*

Chair: L. A. Watts and A. H. Harvey

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-1B40**

- 3:55 PM** **Infinite Dilution Activity Coefficients and P-x Data for Aqueous and Nonaqueous Binary Systems using an Isothermal Equilibrium Static Cell**

P. Chatkun Na Ayuttaya, T.N. Rogers\* and M.E. Mullins,  
*Michigan Technological University, Houghton, MI, U.S.A.*

- 4:15 PM** **Experimental Data for Liquid-Liquid-Vapor Equilibrium for the Binary System Water + Propylene and the Quaternary System: Water + [Methyldiethanolamine + Diethanolamine (25 Weight % Total Amine)] + Propylene, at Different Temperatures**

A. Romero-Martínez\* and A. Trejo, *Instituto Mexicano del Petróleo, México D. F., Mexico*

- 4:35 PM** **Isochoric Heat Capacities of Pure Alcohols and Their Aqueous Mixtures**

H. Kitajima\*, N. Kagawa, H. Endo and S. Tsuruno, *National Defense Academy, Yokosuka, Japan* and J.W. Magee, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

- 4:55 PM** **Pressure Effects on the Viscosity of Water and Aqueous Sugar Solutions at Low and Moderate Temperatures in Comparison to Concentration and Temperature Effects**

P. Foerst\* and A. Delgado, *TU Muenchen, Freising, Germany*

- 5:15 PM** **The Equation of State for C<sub>60</sub> Fullerene Aqueous Solution**

I.I. Adamenko, K.O. Moroz\*, S.S. Durov and Yu.I. Prylutskyy, *Kiev National Taras Shevchenko University, Kiev, Ukraine*, P. Scharff, *TU Ilmenau, Ilmenau, Germany* and T. Braun, *Institute for Inorganic and Analytical Chemistry, L. Eotvos University, Budapest, Hungary*

**Thursday, June 26, 2003**

**Properties of Polymers and Mesoscopic Systems 1**  
**Organic-Inorganic Systems**

Chair: M. Mueller and F. W. Starr

**Afternoon - 2: 3:50 - 5:55**

**Room: Eng-200**

- 3:55 PM     Fundamental Properties of Polymer Nanocomposites from Molecular Simulation (Invited)**

F.W. Starr\* and J.F. Douglas, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.* and S.C. Glotzer, *University of Michigan, Ann Arbor, MI, U.S.A.*

- 4:35 PM     Electric Field-Reversible Three-Dimensional Colloidal Crystals**

T. Gong\*, D.T. Wu and D.W. Marr, *Colorado School of Mines, Golden, CO, U.S.A.*

- 4:55 PM     Chain Dimensions and Concentration Fluctuations in Weakly and Strongly Interacting Polymer Blends**

Y.B. Melnichenko\* and G.D. Wignall, *Oak Ridge National Laboratory, Oak Ridge, TN, U.S.A.* and D. Schwahn, *Forschungszentrum Jülich GmbH, Jülich, Germany*

- 5:15 PM     Single Repulsive, Attractive and Amphiphilic Chains in Normal and Associated Supercritical Solvents: Molecular Simulation Study**

M. Lisal and I. Nezbeda\*, *Academy of Sciences, Prague, Czech Republic*

- 5:35 PM     Thermophysical Properties of Foamcoke and Intumescent Coatings of Modified Carbon Metal**

S.G Shuklin\* and V.I. Kodolov, *Izhevsk State Technical University, Izhevsk, Russia*

**Thursday, June 26, 2003**

***Properties of Solids 3***  
***Thermomechanical Interactions***

Chair: N. T. Wright

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-265**

- 3:55 PM Hydrate Thermal Expansivity Measurements by X-ray Diffraction**

Z. Huo\*, K.T. Miller and E.D. Sloan, *Colorado School of Mines, Golden, CO, U.S.A.*

- 4:15 PM Use of a Thermographic Approach for Non-Destructive Evaluation in the Field of Fracture Mechanics**

G.A. Kurilenko\*, M.M. Sazonov and N.Y. Troitsky, *Novosibirsk State Technical University, Novosibirsk, Russia*

- 4:35 PM Fracture Mechanisms of Unidirectional Fiber Composites**

G.H. Narzullaev\*, *Samarkand State University, Samarkand, Uzbekistan*

- 4:55 PM Influence of the Elasticity of Diffusant Vapors on the Electrical Properties of Selenium in Silicon**

E.U. Arzikulov\*, S.N. Srajev, T.U. Toshboev, M.R. Arzikulova, Rozimurodov and S. Ochilov, *Samarkand State University, Samarkand, Uzbekistan*

- 5:15 PM Study of the Heat of Vaporization of Cadmium using a Laser Resonant Photoionization Method**

A.T. Tursunov\*, *Samarkand State University, Samarkand, Uzbekistan*

**Thursday, June 26, 2003**

***Properties of Working Fluids, including Refrigerants 6***  
***Experimental Thermodynamics 2***

Chair: E. W. Lemmon and M. O. McLinden

**Afternoon - 2: 3:50 - 5:35**

**Room: Eng-1B51**

- 3:55 PM Measurements of Specific Heat Capacity at Constant Pressure and Assessment of Thermodynamic Properties in the Liquid Phase for Five Pure Hydrofluorocarbons**

S. Matsueda, T. Okabe\* and H. Sato, *Keio University, Yokohama, Japan*

- 4:15 PM An Experimental Study of the pVTx Properties for Binary Mixtures of HFC-32 and HFC-125 in the Range of Densities from 900 to 1400 kg/m<sup>3</sup>**

T. Miyazaki\* and K. Oguchi, *Kanagawa Institute of Technology, Kanagawa, Japan*

- 4:35 PM Precise Measurements of Liquid and Gaseous PVT Properties near Saturation and Assessment of Thermodynamic Behavior in the Gaseous Phase for Difluoromethane (R32) and Pentafluoroethane (R125)**

N. Matsuda, K. Morita, M. Morishima and H. Sato\*, *Keio University, Yokohama, Japan*

- 4:55 PM Compressed Liquid Densities and Saturated Liquid Densities of HFC-365mfc**

S. Bobbo, M. Scattolini, L. Fedele\* and R. Camporese, *National Research Council, Padova, Italy*

## **Friday, June 27, 2003**

### **Fluid Property Measurements 5** *Transport and Thermophysical Properties*

Chair: J. D. Olson

**Morning - 1: 8:30 - 10:15**

**Room: Eng-265**

- 8:35 AM Viscosity and Density of Eight Hydrocarbon Liquids at Pressures up to 2 kbar and Temperatures up to 200 °C.**

D.R. Caudwell\*, J.P.M. Trusler and V. Vesovic, *Imperial College of Science, Technology and Medicine, London, United Kingdom* and W.A. Wakeham, *University of Southampton, Southampton, Highfield, United Kingdom*

- 8:55 AM The Viscosity of Di-Isodecylphthalate: A Potential Standard of Moderate Viscosity**

F.J.P. Caetano\*, *Universidade Aberta, Lisboa, Portugal*, J.M.N.A. Fareleira, *Instituto Superior Técnico, Lisboa, Portugal*, C.M.B.P. Oliveira, *Universidade Aberta, Lisboa, Portugal* and W.A. Wakeham, *University of Southampton, Southampton, Highfield, United Kingdom*

- 9:15 AM Measurements of the Speed of Sound in Water between 273 and 400 K and with Pressures up to 90 MPa**

G. Benedetto, R.M. Gavioso, A. Giuliano Albo, S. Lago\*, M. Ripa and R. Spagnolo, *Istituto Elettrotecnico Nazionale Galileo Ferraris, Torino, Italy*

- 9:35 AM Enhancing the Effective Thermal Conductivity of Liquids with Dilute Suspensions of Nano Particles**

B.-X. Wang\*, L.-P. Zhou and X.-F. Peng, *Tsinghua University, Beijing, P.R. China* and X.-X. Zhang, *Beijing University of Science and Technology, Beijing, P.R. China*

**Friday, June 27, 2003**

**Novel Instrumentation and Measurement Techniques 7**  
**Systems at Equilibrium 2**

Chair: T. J. Bruno

**Morning - 1: 8:30 - 10:15**

**Room: Eng-245**

- 8:35 AM A Direct-Weighing Corrosion-Resistant High-Temperature Isochoric PVT Apparatus**

J.W. Magee, *National Institute of Standards and Technology, Boulder, CO, U.S.A.* and A.I. Abdulagatov\*, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

- 8:55 AM An Apparatus for Measurements of the Speed of Sound in Liquids under High Pressures**

K. Meier\* and S. Kabelac, *University of the Federal Armed Forces Hamburg, Hamburg, Germany*

- 9:15 AM Non-Invasive Vapor Liquid Equilibrium Measurements**

W.C. Andersen\* and T.J. Bruno, *National Institute of Standards and Technology, Boulder, CO, U.S.A.*

- 9:35 AM A Proposed Data Processing Method for Isobaric Heat Capacity Measurements by the Heat Relaxation Method for Fluids and Fluid Mixtures**

K. Tanaka\* and M. Uematsu, *Keio University, Yokohama, Japan*

**Friday, June 27, 2003**

***Properties of Aqueous Systems 4***

***Modeling Phase Equilibria***

Chair: A. H. Harvey

**Morning - 1: 8:30 - 10:15**

**Room: Eng-1B40**

- 8:35 AM      Modeling Phase Equilibria and Speciation in Mixed-Solvent Electrolyte Systems**

P. Wang, A. Anderko\*, R.D. Young and R.D. Springer, *OLI Systems Inc., Morris Plains, NJ, U.S.A.*

- 8:55 AM      Activity Coefficients of the Constituents of Model Wastes of Organic Solvents and Electrolytes. Part II: Phase Equilibria Predictions**

P.C.N. Ayuttaya, M.E. Mullins\* and T.N. Rogers, *Michigan Technological University, Houghton, MI, U.S.A.*

- 9:15 AM      Study of the Salting Out Effect of Strong Electrolytes on Water + Oil Solutions**

A. Galindo\*, B.H. Patel and P. Paricaud, *Imperial College of Science, Technology and Medicine, London, United Kingdom* and G.C. Maitland, *Schlumberger Cambridge Research, Cambridge, United Kingdom*

- 9:35 AM      Phase Equilibria for the Oxygen-Water System at Elevated Temperatures and Pressures**

X. Ji\*, *Royal Institute of Technology, Stockholm, Sweden*, X. Lu, *Nanjing University, Nanjing, P.R. China* and J. Yan, *Royal Institute of Technology, Stockholm, Sweden*

**Friday, June 27, 2003**

**Properties of Polymers and Mesoscopic Systems 2**

**Thermal Kinetics and Gas Solubility**

Chair: F. W. Starr and C. C. Han

**Morning - 1: 8:30 - 10:15**

**Room: Eng-200**

**8:35 AM Thermal Nonequilibrium Fluctuations in Fluids at Mesoscopic Length Scales**

J.M. Ortiz de Zarate, *Universidad Complutense, Madrid, Spain*  
and J.V. Sengers\*, *University of Maryland, College Park, MD, U.S.A.*

**8:55 AM Thermal Diffusivity of Finitely Deformed Elastomers**

Y. Wang and N.T. Wright\*, *Michigan State University, East Lansing, MI, U.S.A.*

**9:15 AM Lattice Model for Thermodiffusion in Polymer Solutions**

J. Luettmer-Strathmann\* and M. Boiwka, *The University of Akron, Akron, OH, U.S.A.*

**9:35 AM Gas Sorption in Poly(lactic Acid) and Packaging Materials**

N.S. Oliveira\*, A. Ferreira and I.M. Marrucho, *Universidade de Aveiro, Aveiro, Portugal* and J.R. Dorgan, *Colorado School of Mines, Golden, CO, U.S.A.*

**9:55 AM Direct Measurement of Gas Solubilities in Polymers using a High-Pressure Microbalance**

N. von Solms\*, *Technical University of Denmark, Lyngby, Denmark*, I.-M. Procida, *NKT Flexibles A/S, Brøndby, Denmark* and S.I. Andersen and E.H. Stenby, *Technical University of Denmark, Lyngby, Denmark*

**Friday, June 27, 2003**

***Properties of Solids 4***

***Modeling and Theory***

Chair: N. T. Wright

**Morning - 1: 8:30 - 10:15**

**Room: Eng-155**

- 8:35 AM   **Modelling of High-Temperature Thermodynamic Properties of Metals**  
                  G. Grimvall\*, *Royal Institute of Technology, Stockholm, Sweden*
- 8:55 AM   **Theory of Thermal Conductivity of Zirconia Containing Rare Earth Solutes**  
                  P.G. Klemens\*, *University of Connecticut, Storrs, CT, U.S.A.*
- 9:15 AM   **Double Anomalous Peak in the Heat Capacity Just Below the Triple Point of Saturated e-H<sub>2</sub> with FeO(OH)**  
                  T. Nakano\*, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*, W.L. Tew, *National Institute of Standards and Technology, Gaithersburg, MD, U.S.A.* and O. Tamura and H. Sakurai, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*
- 9:35 AM   **Analysis of Relationships between Thermal Pressure and Volume Expansion for Solids at High Temperatures**  
                  K. Shanker Singh\*, *R.B.S. College, Agra, India*

## **Friday, June 27, 2003**

### ***Properties of Working Fluids, including Refrigerants 7***

#### ***Experimental Thermodynamics 3***

Chair: C. Muzny and M. O. McLinden

**Morning - 1: 8:30 - 10:15**

**Room: Eng-1B51**

- 8:35 AM An Experimental Study of the pVTx Properties for Aqueous Solutions of Ammonia Focusing on the Maximum Density**

K. Oguchi\*, Y. Ibusuki and M. Nakano, *Kanagawa Institute of Technology, Kanagawa, Japan* and H. Kitamura, *Digital Process, Kanagawa, Japan*

- 8:55 AM Thermodynamic Properties of Lithium-Bromide Aqueous Solutions**

K. Murakami\* and N. Kondo, *Tokyo Metropolitan University, Tokyo, Japan*

- 9:15 AM Vapor-Liquid Equilibria and Densities of Ternary Mixtures of Fluorinated Ethers with Hydrofluorocarbons as R22 Alternatives: Ternary Mixtures with Trifluoromethyl Sulfur Pentafluoride**

I. Kul\*, *Kennesaw State University, Kennesaw, GA, U.S.A.* and A.L. Beyerlein and D.D. DesMarteau, *Clemson University, Clemson, SC, U.S.A.*

- 9:35 AM Rapid Measurements of Thermodynamic Properties for Alternative Refrigerants with Vibrating-Tube Densimeters**

Y. Kano\*, M. Hasumoto, Y. Kayukawa and K. Watanabe, *Keio University, Yokohama, Japan*

- 9:55 AM Isochoric Heat Capacities of Propane + Isobutane Mixtures at Temperatures from 280 K to 420 K and Pressures up to 30 MPa**

H. Kitajima, N. Kagawa\*, H. Endo and S. Tsuruno, *National Defense Academy, Yokosuka, Japan*, J.W. Magee, *National Institute of Standards and Technology, Boulder, CO, U.S.A.* and K. Watanabe, *Keio University, Yokohama, Japan*

## **Friday, June 27, 2003**

### **Fluid Property Measurements 6**

**PVT, Critical, and Thermophysical Properties**

Chair: J. D. Olson

**Morning - 2: 10:35 - 12:20**

**Room: Eng-265**

- 10:40 AM Compressed Liquid Densities of Carbon Dioxide + N,N-Dimethylformamide and Thiophene - Carbon Dioxide ( $\text{CO}_2$ ) + N,N-Dimethylformamide (DMF) Mixtures via a Vibrating Tube Densimeter from 313 to 363 K and 21 MPa**

A. Zúñiga-Moreno, O. Elizalde-Solis and L.A. Galicia-Luna\*, *Instituto Politecnico Nacional, México D. F., Mexico*

- 11:00 AM VLE Measurements at Low Pressure in Polycarbonate Polymerization**

S. Lee\*, W. Bae and H.Y. Kim, *Seoul National University, Seoul, Korea*

- 11:20 AM Viscosity and Surface Tension of Saturated n-Pentane**

A.P. Fröba, *Universität Erlangen-Nürnberg, Erlangen, Germany*, L. Penedo Pellegrino\*, *Universidade de Lisboa, Lisboa, Portugal* and A. Leipertz, *Universität Erlangen-Nürnberg, Erlangen, Germany*

- 11:40 AM PVT Measurements of Mixtures of n-Undecane and n-Dodecane on the Saturation Line**

R.A. Medzhidov\*, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

- 12:00 PM Density of the System (Ethylene Glycol + Water + Hydrazine) at Various Pressures and Temperatures**

M.M. Safarov\*, M.A. Zaripova, A.H. Davlatov, M.T. Turgunboev and U.I. Karomatulloev, *Tajik Technical University named after M.S. Osimi, Dushanbe, Tajikistan*

**Friday, June 27, 2003**

**Novel Instrumentation and Measurement Techniques 8**  
**Systems at Equilibrium 3**

Chair: T. J. Bruno

**Morning - 2: 10:35 - 12:20**

**Room: Eng-245**

- 10:40 AM Precision Cryogenic Dilatometer for James Webb Space Telescope Materials Testing**

M. Dudik\*, P.G. Halverson, M. Levine, M. Marcin, D. Peters and S.B. Shaklan, *California Institute of Technology, Pasadena, CA, U.S.A.*

- 11:00 AM A New Method to Measure Partial Molar Volumes of Binary Gas Mixtures**

P.A. Russell, B.A. Buffham, G. Mason and K. Hellgardt\*, *Loughborough University, Loughborough, Leicestershire, United Kingdom*

- 11:20 AM Viscosity and Surface Tension of High-Viscosity Fluids from Surface Light Scattering (SLS)**

A.P. Fröba\* and A. Leipertz, *Universität Erlangen-Nürnberg, Erlangen, Germany*

- 11:40 AM A Microwave-Ultrasonic Cell for Sound Speed Measurements in Liquids**

G. Benedetto, R.M. Gavioso, S. Lago, D. Madonna Ripa\* and R. Spagnolo, *Istituto Elettrotecnico Nazionale Galileo Ferraris, Torino, Italy*

**Friday, June 27, 2003**

***Properties of Aqueous Systems 5***

Chair: A. H. Harvey

**Morning - 2: 10:35 - 12:20**

**Room: Eng-1B40**

**10:40 AM    Finely Discretized Lattice Simulations of SPC/E Water**

C.S. Lock, *Princeton University, Princeton, NJ, U.S.A.*, S. Moghaddam\*, *University of Maryland, College Park, MD, U.S.A.* and A.Z. Panagiotopoulos, *Princeton University, Princeton, NJ, U.S.A.*

**11:00 AM    Effect of Solute Size and Solute-Water Attractive Interactions on Hydration Water Structure Around Hydrophobic Solutes**

H.S. Ashbaugh\*, *Los Alamos National Laboratory, Los Alamos, NM, U.S.A.*

**11:20 AM    HO<sup>-</sup> (aq) Structure and Mobility**

D. Asthagiri\*, L.R. Pratt and J.D. Kress, *Los Alamos National Laboratory, Los Alamos, NM, U.S.A.* and M.A. Gomez, *Vassar College, Poughkeepsie, NY, U.S.A.*

**11:40 AM    Electrochemical Studies of the Thermodynamic Properties of Aqueous Solutions at Temperatures above 300 °C**

S.N. Lvov\*, *Pennsylvania State University, University Park, PA, U.S.A.*

**12:00 PM    Development of a pH Scale Based on the Ionic Interaction Approach (Pitzer Method)**

P.Ya. Tishchenko\*, *Russian Academy of Sciences, Vladivostok, Russia* and C.S. Wong, *Institute of Ocean Sciences, Sidney, British Columbia, Canada*

## **Friday, June 27, 2003**

### ***Properties of Polymers and Mesoscopic Systems 3***

#### ***Polymer Thermodynamics***

Chair: F. W. Starr and K. Migler

**Morning - 2: 10:35 - 12:20**

**Room: Eng-200**

- 10:40 AM    Coupling of Critical Fluctuations with Self-Entanglements  
in Polymer Solutions**

A.F. Kostko\*, M.A. Anisimov and J.V. Sengers, *University of Maryland, College Park, MD, U.S.A.*

- 11:00 AM    The Use of Scanning Transiometry to Investigate -  
Thermodynamic Properties of Polymeric Systems over  
Extended Ranges of *T* and *P***

J-P.E. Grolier\*, F. Dan and S.A.E. Boyer, *Université Blaise Pascal, Aubière, France*, M. Orlowska, *Polish Academy of Sciences, Warsaw, Poland* and S.L. Randzio, *Université Blaise Pascal, Aubière, France*

- 11:20 AM    Phase Behavior of Poly(methyl methacrylate) and  
Polystyrene in Cyclohexanol: Modeling and Experiment**

V. Garcia Sakai\*, *Pennsylvania State University, University Park, PA, U.S.A.*, J.P.M. Trusler and J.S. Higgins, *Imperial College of Science, Technology and Medicine, London, United Kingdom* and A.N. Burgess, *Wilton Research Centre, Cleveland, Middlesborough, United Kingdom*

**Friday, June 27, 2003**

**Properties of Solids 5**

*Crystals*

Chair: N. T. Wright

**Morning - 2: 10:35 - 12:20**

**Room: Eng-155**

- 10:40 AM Electrical and Thermoelectrical Properties of  $\text{TiMnS}_2$  and  $\text{TiMnSe}_2$**

S.N. Mustafaeva\*, E.M. Kerimova, A.I. Jabbarly and Sh.D. Alizade, *National Academy of Sciences, Baku, Azerbaijan*

- 11:00 AM Attenuation of Hypersonic Waves in Lithium Niobate Crystals with Impurities**

F.R. Akhmedzhanov\*, *Samarkand State University, Samarkand, Uzbekistan*

- 11:20 AM Thermal Conductivity of  $\text{NaLaS}_2 - \text{CaS}$  System**

S.M. Luguev\* and N.V. Lugueva, *Dagestan Scientific Center of Russian Academy of Sciences, Makhachkala, Russia*

- 11:40 AM Influence of Temperature on the Absorption Spectra of Novel  $\text{TIGa}_{1-x}\text{Fe}_x\text{Se}_2$  Single Crystals**

E.M. Kerimova\*, S.N. Mustavaeva, N.Z. Gasanov, A.I. Gasanov and R.N. Kerimov, *National Academy of Sciences, Baku, Azerbaijan*

- 12:00 PM Study of CdS Evaporation Kinetics using a Laser Spectroscopy Method**

H.S. Hamraev\* and A.T. Tursunov, *Samarkand State University, Samarkand, Uzbekistan*

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